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POSITIVE AGGLUTINATION TESTS IN SUSPECTED CASES OF WEIL'S DISEASE*

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With the aid of agglutination tests (19, 20, 27) and of inoculation tests of susceptible animals (15, 16, 17, 18), both developed during the past 10 years, an increasing number of cases of Weil's disease have been revealed throughout the world, not only in man but also in dogs and rodents (3, 5, 7, 9, 13, 17, 24).

Up to 1935 there had been only 12 proved cases of Weil's disease (icterohaemorrhagic spirochetosis) reported in man in the United States and Canada (1, 2, 4, 11, 12, 25, 28). During the past 5 years, however, this number has been nearly doubled (6, 8, 9, 10, 13, 14, 16, 17, 24) and, in all probability, this represents only a small portion of the cases which may have occurred but which missed diagnosis.

The object of the present study is to call attention to the value of the agglutination test for the diagnosis of Weil's disease and to report 40 new human cases in the United States diagnosed during the past 4 years by the writer by the use of such a procedure.

Four of the forty cases recorded in this communication are known to have been reported by the attending physicians. These cases are designated in table 1 as Nos. 1, 18, 23, and 25 (9, 10, 14, 31).

MATERIALS AND METHODS

*Clinical materials.*¹—Samples of blood or blood serum taken from 447 human cases of suspected infectious jaundice, yellow fever, or Weil's disease were sent directly by attending physicians, or through State or local health departments, to the National Institute of Health in Washington for diagnosis. From 82 additional cases, 82 specimens of blood and 39 specimens of urine were collected by the writer with the cooperation of local health officers and physicians during out-

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¹ It is impossible to mention the names and addresses of all physicians and health officers who sent us the specimens and whenever requested, brief clinical histories of their patients. The writer is indebted to all attending physicians and health officers for their kind cooperation in this study. The names of the physicians who attended the 40 positive cases of Weil's disease will be found in table 1.

breaks of infectious jaundice in the States of Michigan, Minnesota, and Pennsylvania.

Agglutination tests.—The microscopic agglutination test for diagnosis of Weil's disease as described by Schüffner (19, 20) was used with slight modification. In its principle and procedure the test is similar to the typhoid agglutination test.

The agglutination reactions were recorded after 2 hours' incubation at 30° C. Only the samples which gave complete agglutination reactions with the antigen of type I *Leptospira icterohaemorrhagiae*² were recorded as positive. (See table 1.) Delayed and partial agglutination reactions in low dilutions were considered doubtful and are omitted from this communication.³

The antigen was prepared as follows: The *Leptospira icterohaemorrhagiae* (type I) was grown in liquid medium (each tube contained 5 cc. of buffered Ringer's-peptone solution and 0.5 cc. of rabbit serum)⁴ at 30° C. When the growth was at its maximum, usually from the third to the eighth days, the growth of several tubes, depending on the need, was combined in a sterile flask. To each 100 cc. of antigen from 0.2 to 0.3 cc. of formalin was added in order to render the spirochetes motionless; it was then shaken vigorously for a few minutes, a drop was examined microscopically to ascertain that *Leptospira* were no longer motile or in clumps, and the whole was centrifuged at low speed to remove the coarse particles which settled in the bottom of the centrifuge tube. The supernatant fluid containing many leptospirochetes was used as antigen. Since the culture media did not interfere with the test, the spirochetes were not washed in physiological salt solution, and, because of the rich growth, it was not concentrated. The turbidity of freshly prepared formalinized antigen was about the same density as that of stock typhoid vaccine. To the serum dilutions equal amounts of freshly prepared formalinized antigen were added (the final serum dilutions ranged from 1:10 to 1:30,000), mixed and incubated 2 hours at 30° C., after which a droplet from each dilution was examined microscopically without cover glass, with low power (objective 21, ocular 10×) by dark-field illumination. Some of the positive samples later on were diluted to as high as 1:409,600

² *Leptospira icterohaemorrhagiae* (Inada and Ido, 1915), emend. Noguchi, 1917, has several synonyms as follows: (?*Spirochaeta*) *interrogans*, Stimson, 1907; *Spirochaeta icterohaemorrhagiae*, Inada and Ido, 1915; *Spirochaeta nodosa*, Huebener and Rieter, 1915; *Spirochaeta icterogenes*, Uhlenhuth und Fromme, 1916; *Leptospira icteroides*, Noguchi, 1919; *Leptospira canicola*, Klarenbeek and Schüffner, 1934; *Leptospira interrogans*, (Stimson, 1907) emend. Wenyon, 1926 (17, 21, 22, 23, 30).

³ In view of the fact that at least 4 agglutination types of *Leptospira* are known to exist (17), doubtful and negative clinical specimens were saved to be tested later with new strains of *Leptospira*. Serum samples from 36 cases of Weil's disease after storage in the refrigerator at about 5° C. from 169 to 1,078 days were retested and the majority of the samples were found to be still diagnostic in value. (See table 2.) Sera from present cases, with few exceptions, were tested with type I *Leptospira icterohaemorrhagiae*, which appears to be the one most prevalent and of world-wide distribution.

⁴ The basic liquid medium supporting the growth of *Leptospira* is known as Vervoort's medium. It is made by adding 3 grams of peptone, 600 cc. of Ringer's solution, and 300 cc. of phosphate buffered solution having a pH of 7.2, to 1,500 cc. of water.

in order to learn the highest agglutinating titer. However, for the routine work the final dilutions up to 1:30,000 were selected as simple and adequate procedure for diagnostic purposes. Regular dark-field condenser and Leitz special dark-field condenser D. O. 80 were used with "dry" objective of low ($\times 210$) and medium ($\times 450$) powers.

Direct microscopic examination of blood of patients.—Blood specimens from 9 suspected cases sent to Washington by attending physicians, and blood specimens from 39 out of 82 cases collected by the writer in the field, were examined by dark-field illumination under oil immersion lens (objective $93\times$ ocular $10\times$) for *Leptospira*.

Animal inoculations.—A limited number of specimens of blood (cases 7, 8, 11, 17, 18, 23, 25, 28, and 39), taken during the later stages of illness, were inoculated into young guinea pigs and deer mice (*Peromyscus eremicus*, *P. maniculatus*, and *P. polionotus* (17)). Usually these specimens were drawn during the latter part of the illness and were in transit for 1 to 5 days before reaching Washington through the mail. In addition, specimens of blood or urine, or both, collected from 82 patients living in the States of Michigan, Minnesota, and Pennsylvania, and suffering from infectious jaundice ("infective hepatitis") were inoculated into susceptible animals for possible detection of *Leptospira*. The outbreaks in Michigan and Pennsylvania affected, for the most part, young persons from about 4 to 23 years of age, while the outbreak in Minnesota affected both young persons and adults. During the epidemic special efforts were made to collect specimens from cases of infectious jaundice at various stages of the illness, ranging from about 2 to 30 days following the onset. The tail blood of the inoculated deer mice was examined under cover-glass preparation by dark-field illumination daily, or every other day, while the blood from guinea pigs' ears was examined on about the sixth to the fourteenth day following inoculation. From about the end of the third week up to 2 months, the surviving animals were all killed and the heart blood was used for agglutination tests.

DATA

Results of microscopic agglutination tests.—As shown in table 1, serum specimens from 40 scattered cases agglutinated with formalinized antigen of type I *Leptospira icterohaemorrhagiae*. All these sera gave strong agglutination reactions in dilution of 1:100. In 3 cases the highest agglutination titer was 1:300; in 2 cases, 1:1,000; in 1 case, 1:3,000; in 7 cases, 1:10,000; while 27 cases gave an agglutination titer of 1:30,000 and over. The urine of case 39 likewise gave a prompt agglutination reaction in dilutions up to 1:100. The agglutination titer in all these cases at the dilution mentioned was prompt and completed within 2 hours.

TABLE 1.—Diagnosis of 40 human cases of Weil's disease as determined by agglutination tests with type I *Leptospira icterohaemorrhagiae*

Case No.	Attending physician	Color	Age	Geographical distribution	Occupation	Onset of illness	Number of samples from each case	Number of days following onset	Agglutination reaction, dilution of serum					Outcome of illness	
									1:100	1:300	1:1,000	1:3,000	1:10,000		1:30,000
1	Dr. John R. Paul	W	30	New Haven, Conn.	Farm hand	Nov. 1939	{ a b }	38 47	+++	+++	+++	+++	+++	+++	Recovered.
2	Capt. Albert R. Dreisbach	W	(1)	Washington, D. C.	Veteran	Aug. 1939	{ a b }	30 32	+++	+++	+++	+++	+++	0	Do.
3	Dr. J. G. Parker	W	37	New Orleans, La.	Mechanic in cotton-warehouse	July 1939	{ a b }	9 15	+++	+++	+++	+++	+++	0	Do.
4	Dr. R. S. Schear	W	17	do.	do.	Sept. 1939	{ a b }	9 15	+++	+++	+++	+++	+++	0	Do.
5	Dr. Pullen and Dr. St. Martin	C	19	do.	do.	Oct. 1939	{ a b }	21±	+++	+++	+++	+++	+++	0	Do.
6	Drs. Jos. E. Holoubek and Alice E. Baker	W	54	do.	do.	Mar. 1940	{ a b }	57	+++	+++	+++	+++	+++	0	Do.
7	Drs. Kendall Emerson, Jr., and Perrin H. Long	W	50	Baltimore, Md.	Steel worker	Oct. 1937	{ a b }	53	+++	+++	+++	+++	+++	0	Do.
8	Do.	W	69	do.	Grass cutter	Sept. 1937	{ a b }	8±	+++	+++	+++	+++	+++	0	Do.
9	Drs. K. Emerson, Jr., L. W. Ladd, Jr., and Perrin H. Long	C	(1)	do.	Floor scrubber	June 1938	{ a b }	18	+++	+++	+++	+++	+++	0	Died.
10	Drs. K. Emerson, Jr., and P. H. Fletcher	W	31	do.	Garbage collector	Aug. 1938	{ a b }	16	+++	+++	+++	+++	+++	0	Recovered.
11	Drs. C. R. Austrian and G. E. Levi	W	28	do.	Milkman on farm	Sept. 1938	{ a b }	(1)	+++	+++	+++	+++	+++	0	Do.
12	Drs. John T. King and D. Hollander	C	51	do.	Housewife	Sept. 1938	{ a b }	42	+++	+++	+++	+++	+++	0	Died.
13	Dr. Vernon H. Norwood	W	11	do.	School boy, lives in shack	Aug. 1939	{ a b }	45	+++	+++	+++	+++	+++	0	Recovered.
14	Dr. Alice S. Myers (in service of Dr. Edwards A. Park)	W	7	do.	School boy (brother of case 15)	Sept. 1940	{ a b }	45	+++	+++	+++	+++	+++	0	Do.
15	Do.	W	9	do.	School boy (brother of case 14)	Sept. 1940	{ a b }	45	+++	+++	+++	+++	+++	0	Do.
16	Drs. David Litchman and J. D. Cohen	W	24	Boston, Mass.	Butcher in an abattoir	July 1939	{ a b }	(1)	+++	+++	+++	+++	+++	0	Do.
17	Drs. H. C. Burrell and F. L. Burnett	W	(1)	Gloucester, Mass.	do.	June 1939	{ a b }	21	+++	+++	+++	+++	+++	0	Died.
18	Drs. Wm. H. Gordon and Joseph C. Molner	W	32	Detroit, Mich.	Poultry business	Feb. 1938	{ a b }	21	+++	+++	+++	+++	+++	0	Recovered.
19	Drs. Arthur A. Humphrey and Kenneth Lown	W	39	Battle Creek, Mich.	Laborer (cereal manufacturing)	Sept. 1939	{ a b }	(1)	+++	+++	+++	+++	+++	0	Do.

20	Drs. Carl R. Ferris and C. F. Kent.	W	(1)	Kansas City, Mo.	Bridge builder, iron worker.	Jan. 1938	a	71	+++++	+++++	+++++	+++++	+	0	Do.
21	Do.	W	46	do.	Bridge construction.	Feb. 1938	a	(1)	+++++	+++++	+++++	+++++	0	0	Do.
22	Dr. Harry E. Fichtlin and Cyrus Seigir.	W	21	Reno, Nev.	Junk yard, handling scrap iron.	July 1938	{ a b	33	+++++	+++++	+++++	+++++	0	0	Do.
23	Dr. Walter Haschee.	W	17	Orange, N. J.	School boy, trapping rats.	Aug. 1938	a	33	+++++	+++++	+++++	+++++	+++++	+++++	Do.
24	Drs. Grace E. Lutman and Milton Manette.	W	32	Jersey City, N. J.	Skinning lambs.	Nov. 1939	c	20±	+++++	+++++	+++++	+++++	+++++	+++++	Do.
25	Drs. A. R. Kantrowitz and S. Glotzer.	W	36	Brooklyn, N. Y.	Fish cutter in a market.	Oct. 1937	{ b c	20	+++++	+++++	+++++	+++++	+++++	+++++	Do.
26	Dr. A. R. Kantrowitz.	W	33	do.	do.	Aug. 1938	a	165	+++++	+++++	+++++	+++++	+++++	+++++	Do.
27	Lt. Col. M. Carbonell.	W	(1)	West Point, N. Y.	Sign painter.	July 1938	a	24	+++++	+++++	+++++	+++++	+++++	+++++	Do.
28	Dr. A. R. Kantrowitz.	W	64	Brooklyn, N. Y.	Trolley-car motorman.	Dec. 1939	a	(1)	+++++	+++++	+++++	+++++	0	0	Do.
29	Dr. Ward J. MacNeal and Dr. Ellison Farrall.	W	37	New York City	Clerk in a fish market.	Sept. 1939	a	(1)	+++++	+++++	+++++	+++++	0	0	Died.
30	Dr. C. W. Kump.	C	32	Cincinnati, Ohio.	Fish cleaner.	June 1939	a	16	+++++	+++++	+++++	+++++	+++++	+++++	Recovered.
31	Do.	C	19	do.	do.	June 1939	a	21	+++++	+++++	+++++	+++++	+++++	+++++	Do.
32	Drs. Wm. F. Ashe and R. E. Stoner.	W	(1)	do.	do.	July 1939	a	(1)	+++++	+++++	+++++	+++++	+++++	+++++	Do.
33	Dr. Wm. F. Ashe.	W	(1)	do.	do.	Oct. 1939	a	(1)	+++++	+++++	+++++	+++++	+++++	+++++	Do.
34	Drs. F. B. Faust, C. J. Buckner, and H. H. Helmann.	W	24	Philadelphia, Pa.	Furniture store employee.	Sept. 1939	a	57	+++++	+++++	+++++	+++++	+++++	+++++	Died.
35	Dr. J. D. Reid.	C	62	Richmond, Va.	Market, picking chickens.	Sept. 1939	a	11+	+++++	+++++	+++++	+++++	+++++	+++++	Do.
36	Do.	C	18	do.	Pump operator.	Sept. 1939	{ a b	13+	+++++	+++++	+++++	+++++	+++++	+++++	Recovered.
37	Do.	C	56	do.	Junk dealer.	Feb. 1940	{ b c	48	+++++	+++++	+++++	+++++	+++++	+++++	Do.
38	Do.	W	34	do.	do.	July 1940	{ a b	6	+++++	+++++	+++++	+++++	+++++	+++++	Do.
39	Drs. G. P. Heffner and T. H. Hutchinson.	W	(1)	Belle, W. Va.	Gardener, laborer.	July 1938	c	19	+++++	+++++	+++++	+++++	+++++	+++++	Do.
40	Dr. W. Fuischar.	W	60	Charleston, W. Va.	Loader in coal mine.	Sept. 1939	a	10±	+++++	+++++	+++++	+++++	+++++	+++++	Do.

1 Adult.

* Exact number of days following onset not available, probably 2 to 6 weeks.

* Post-mortem serum.

* Short illness.

Case 1 was in the service of Dr. Francis G. Blake, professor of internal medicine, School of Medicine, Yale University, New Haven, Conn.

Cases 7, 8, 9, and 10 were in the service of Dr. Warfield T. Longcope, professor of medicine, Johns Hopkins University, Baltimore, Md.

Cases 30, 31, 32, and 33 were in the service of Dr. H. A. Blankenhorn, professor of internal medicine, University of Cincinnati, Cincinnati, Ohio.

The sample of urine from Case 39 collected 29 days following onset of illness gave strong agglutination with *Leptospira icterohaemorrhagiae*. The titer, however, was very low (1:600).

REMARKS. During 1937, 1938, and 1939 several outbreaks of infectious jaundice ("in-

fectious hepatitis") occurred in the United States. The writer was sent to study 3 of these outbreaks, 1 in the State of Michigan involving over 300 cases, 1 in Windber, Pa. (a mining town), where over 200 cases occurred, and a third in Austin, Minn. Most of the cases in both Michigan and Pennsylvania were among school children of both sexes ranging from 4 to 23 years of age. Only a few cases occurred in adults (24 to 53 years), while in Austin, Minn., about 10 percent of all the cases were among adults. The writer was unable to demonstrate *Leptospira* in either the 39 samples of urine or the 82 samples of blood from cases from these localities either by animal inoculation tests or by cultural and direct microscopic examinations. Similarly, samples of blood serum from all these cases failed to agglutinate with type 1 *Leptospira icterohaemorrhagiae*.

Sera from 2 cases of acute yellow atrophy of the liver failed to agglutinate with type 1 *Leptospira icterohaemorrhagiae* even in very low dilutions (1:10). Control sera of 83 individuals (normal and symptomatic) likewise failed to agglutinate *Leptospira icterohaemorrhagiae* even in very low dilutions such as 1:10.

It was noted that some samples drawn from a given patient in the early stage of the disease gave a relatively low agglutination titer with antigen of type I *Leptospira icterohaemorrhagiae* when compared with subsequent samples drawn 6 to 27 days later, which ran to much higher titers. For example, in the first blood sample drawn from patient No. 4 about 9 days following onset the agglutination titer was 1:3,000, while the second sample from the same patient drawn 15 days after the onset gave a titer of 1:10,000. (See tables 1 and 2, cases 1, 3, 4, 15, 22, 36, and 38.)

Delayed and partial agglutination reactions with type I *Leptospira*, in low dilutions, were obtained in 8 additional cases not included in table 1.

The remaining 494 samples representing 481 clinically suspected cases of epidemic and sporadic infectious jaundice ("infectious hepatitis") or Weil's disease, 2 cases of acute yellow atrophy of the liver, and 1 suspected case of yellow fever from the United States failed to agglutinate with type I *Leptospira icterohaemorrhagiae*. In addition, control serum specimens from 85 individuals, normal and syphilitic, likewise failed to agglutinate type I *Leptospira*, even in very low dilutions such as 1:30.

After the original tests a total of 61 serum specimens from 36 cases of the present group were stored in the refrigerator. These 61 samples were then retested at from 169 to 1,078 days later with the antigen of type I *Leptospira icterohaemorrhagiae* for agglutination reactions. All these samples, with the exception of 4 delayed reactions (cases 20a, 21a, 24a, and 28a), gave prompt and complete agglutination reactions; the titers of the majority of the samples approached or were identical with the original titer. Table 2 gives representative reactions for 28 of the 61 serum specimens.

Direct microscopic examination of the patients' blood.—Direct microscopic examination with dark-field illumination of the blood specimens from cases 7, 8, 11, 17, 18, 23, 25, 28, and 39 gave negative results for *Leptospira*. In addition to these 9 cases, blood specimens collected from 39 cases of infectious jaundice ("infectious hepatitis") were similarly examined with negative results. The hyaline blood filaments and blood fibers, which often resemble *Leptospira* morphologically, were frequently met with and eliminated as such. The physician attending case 27 stated that his technician was able to demonstrate *Leptospira* in the blood and urine of this case microscopically by dark-field illumination.

Animal inoculation tests.—Defibrinated blood specimens from cases 7, 8, 11, 17, 18, 23, 25, 28, and 39 inoculated into young guinea pigs and deer mice, *P. m. gambelii* (17, 18), all gave negative results for *Leptospira icterohaemorrhagiae*. The physicians attending cases 14, 15, 23, 29, 35, and 38 state that they were able to isolate *Leptospira*

TABLE 2.—*The Storage of some positive serum samples from human cases of Weil's disease and the retesting of their agglutination reactions with type I Leptospira icterohaemorrhagiae*

Case No.	Number of sample from each case	Date sample received	Date sample obtained from patient	Number days sample in ice-box storage at about 5° C.	Agglutination reaction, dilution of serum							
					1:10	1:30	1:100	1:300	1:1,000	1:3,000	1:10,000	1:30,000
	b	Dec. 29, 1939	Dec. 27, 1939	292	+++	+++	+++	+++	+++	+++	+++	+++
	a	Aug. 29, 1939	Aug. 29, 1939	414	+++	+++	+++	+++	+++	+++	+++	+++
	a	Aug. 18, 1939	Aug. 9, 1939	425	+++	+++	+++	+++	+++	+++	+++	+++
	b	Sept. 5, 1939	Aug. 31, 1939	407	+++	+++	+++	+++	+++	+++	+++	+++
	b	Sept. 22, 1939	Sept. 15, 1939	390	+++	+++	+++	+++	+++	+++	+++	+++
	a	Dec. 27, 1939	Oct. 31, 1939	±300	+++	+++	+++	+++	+++	+++	+++	+++
	a	May 1, 1940	Apr. 6, 1940	169	+++	+++	+++	+++	+++	+++	+++	+++
	a	Dec. 2, 1937	Nov. 30, 1937	1,052	+++	+++	+++	+++	+++	+++	+++	+++
	b	Nov. 4, 1937	Nov. 2, 1937	1,078	+++	+++	+++	+++	+++	+++	+++	+++
	a	June 22, 1938	June 8, 1938	1,847	+++	+++	+++	+++	+++	+++	+++	+++
	c	Aug. 20, 1938	Aug. 19, 1938	804	+++	+++	+++	+++	+++	+++	+++	+++
	a	Nov. 15, 1939	Sept. 30, 1939	336	+++	+++	+++	+++	+++	+++	+++	+++
	a	Oct. 3, 1939	Sept. 30, 1939	379	+++	+++	+++	+++	+++	+++	+++	+++
	d	Sept. 16, 1938	Sept. 2, 1938	762	+++	+++	+++	+++	+++	+++	+++	+++
	a	Sept. 27, 1939	Sept. 27, 1939	383	+++	+++	+++	+++	+++	+++	+++	+++
	a	Mar. 15, 1938	Mar. 12, 1938	946	+++	+++	+++	+++	+++	+++	+++	+++
	a	Aug. 3, 1938	Aug. 1, 1938	805	+++	+++	+++	+++	+++	+++	+++	+++
	b	Sept. 30, 1938	Sept. 24, 1938	747	+++	+++	+++	+++	+++	+++	+++	+++
	c	Dec. 11, 1939	Nov. 22, 1939	310	+++	+++	+++	+++	+++	+++	+++	+++
	b	Nov. 12, 1937	Oct. 20, 1937	1,069	+++	+++	+++	+++	+++	+++	+++	+++
	e	Mar. 21, 1938	Mar. 16, 1938	940	+++	+++	+++	+++	+++	+++	+++	+++
	a	Aug. 3, 1938	July 29, 1938	805	+++	+++	+++	+++	+++	+++	+++	+++
	a	Nov. 16, 1939	Sept. 27, 1939	384	+++	+++	+++	+++	+++	+++	+++	+++
	a	July 10, 1939	July 18, 1939	454	+++	+++	+++	+++	+++	+++	+++	+++
	a	Sept. 22, 1939	Sept. 15, 1939	390	+++	+++	+++	+++	+++	+++	+++	+++
	a	Sept. 18, 1939	Sept. 15, 1939	394	+++	+++	+++	+++	+++	+++	+++	+++
	c	July 22, 1938	July 18, 1938	817	+++	+++	+++	+++	+++	+++	+++	+++
	a	Sept. 22, 1939	Sept. 20, 1939	390	+++	+++	+++	+++	+++	+++	+++	+++

¹ Post-mortem serum.

NOTE.—The readings recorded above were made after 2 hours. Serum No. 21a was negative at 2 hours but gave a delayed reaction after 18 hours' observation.

icterohaemorrhagiae from the urine of their patients by animal inoculation methods.

The specimens of urine from case 39 collected 29 days following onset of illness likewise gave negative results for *Leptospira* by animal inoculation tests, although in the urine of this case agglutinins for *Leptospira* were present in low dilution (1:100).

During outbreaks of infectious jaundice in Michigan, Pennsylvania, and Minnesota the 82 specimens of blood and 39 specimens of urine collected from the group of 82 cases at various stages of illness (from about 2 to 30 days after onset) were likewise inoculated into susceptible test animals, with negative results for *Leptospira icterohaemorrhagiae*.

The susceptible animals inoculated with the kidney suspension from wild rats (*Rattus norvegicus*) captured in Washington, D. C., Detroit, Mich., and New York City succumbed to icterohemorrhagic spirochetosis.

Clinical data.—The manifestations of the disease ranged from all degrees of mildness to marked severity. Case 10 presented no apparent external jaundice. Most of the patients, however, suffered severe illness extending over a period of from 1 to 7 weeks. Of this series of 40 persons, 6 died.

The chief clinical symptoms recorded for the cases giving positive agglutinations were described, in general, as malaise, initial chill, sudden onset of high fever, headache, muscular pain, prostration, nausea, vomiting, icterus, epistaxis, and hemoptysis. A few of the case histories mentioned hiccoughing, photophobia, and mental disturbances. The chief laboratory findings consisted of leucocytosis (average 20,000 white blood cells per cubic millimeter), increased icterus index, increased nonprotein nitrogen of blood, albuminuria, urobilinuria, and, occasionally, hematuria.

Epidemiological data.—The 40 cases which gave strongly positive agglutination reactions for Weil's disease were sporadic in various States. (See table 1.) Of these, 36 cases occurred in adult males, 1 in an adult female (case 12), and 3 in school children. Of the 40 cases, 8 were in colored persons, the remaining in white persons.

One of the striking features, as seen in table 1, is the similarity in the occupations of these patients. The data available on 30 of the 40 cases indicate that all had lived, or worked, in places where wild rats might have been present, and where working conditions were conducive to skin abrasions.

Data pertaining to reservoir hosts of Weil's disease.—Virulent strains of *Leptospira icterohaemorrhagiae* were isolated by animal inoculation and cultural methods from the kidneys of wild rats (*Rattus norvegicus*) captured in Washington, D. C., Detroit, Mich., and New York City. These rats, which apparently were chronic carriers of *Leptospira*,

showed agglutinins present in their blood, titers ranging from 1:1,000 to 1:10,000. It is noteworthy that in New York City the infected rats were captured in a fish market where cases 25 and 26 apparently contracted the infection.

Blood samples from 25 dogs suffering from jaundice were likewise subjected to agglutination tests with type I *Leptospira icterohaemorrhagiae*. Of this number, 20 gave strong agglutination reactions with type I *Leptospira*. In most of these cases titers were as high as 1:30,000. These cases occurred in Louisiana, Nebraska, New York, Pennsylvania, and Virginia. One of the dogs, belonging to patient 6, contracted the infection at about the same time as did his owner.

DISCUSSION

For absolute diagnosis of Weil's disease it is essential to isolate the organism *L. icterohaemorrhagiae* from the patient's blood or urine by cultural and animal inoculation tests; this, however, must be done with freshly collected specimens in the early stage of the disease. *Leptospira* rarely can be found in the blood of human cases after 5 days and in the urine after a month following onset of illness.

Since the 9 specimens from the 40 cases which were examined for spirochetes were received after this period, or were stored in the ice box several days before they were examined, the failure to isolate organisms was possibly due to these factors. In specimens from the 82 cases encountered during epidemics of jaundice in which material was obtained at a sufficiently early stage of illness to expect positive results, and where animals were inoculated with this material within 2 to 5 hours, the failure to isolate *Leptospira icterohaemorrhagiae*, coupled with negative agglutination tests, suggests that these cases were possibly not classical cases of Weil's disease but were what is known as epidemic jaundice ("infectious hepatitis").

While *L. icterohaemorrhagiae* are readily demonstrable by microscopic search with dark-field illumination in the circulating blood of susceptible animals experimentally inoculated with virulent strains of *Leptospira*, it is difficult to demonstrate them in the blood of human cases diagnosed as suffering from Weil's disease. Few investigators (11, 12) claim to have seen large numbers of *Leptospira* in the blood of patients by direct microscopic examination. The utmost precaution must be exercised not to confuse blood filaments and fibers with *L. icterohaemorrhagiae*. For this reason it is desirable to run agglutination tests with the blood serum of all suspected or questionable cases of Weil's disease, in addition to other clinical and laboratory procedures.

The inoculation of susceptible animals with patient's blood (during the third to fifth day of illness) or urine (from 10 to 30 days following onset), or both, should be done in the very early stages of the disease

as indicated above, using American deer mice (albino *Peromyscus maniculatus*), young *Peromyscus eremicus* (16, 17, 18), and young albino guinea pigs. When an inoculated animal fails to die and *Leptospira* are not demonstrable in its blood at the end of the third week, its heart blood should be tested for the presence of agglutinins and lysins, and, whenever convenient, other young guinea pigs should be inoculated with the kidney suspension from sacrificed animals (23).

The agglutination test, when positive, is of great value in the diagnosis of Weil's disease. On the other hand, negative findings do not exclude the disease. In the early, or incipient, cases of Weil's disease in man specific antibodies may be absent, or present in such minute quantities that they cannot be demonstrated with present methods. However, antibodies are detectable in the circulating blood about 7 days following onset of illness. The quantity increases during the following 8 to 30 days. After the recovery of the patient the specific antibodies are present in the blood for at least 5 years or longer (20).

SUMMARY

1. During the past 4 years, using the microscopic agglutination test, the writer has found agglutinins for type I *Leptospira icterohaemorrhagiae* in the sera of 40 suspected cases of Weil's disease.

2. These cases occurred in the following States: Connecticut (1), Louisiana (4), Maryland (9), Massachusetts (2), Michigan (2), Missouri (2), Nevada (1), New Jersey (2), New York (5), Ohio (4), Pennsylvania (1), Virginia (4), West Virginia (2), and in the District of Columbia (1).

3. Thirty-six cases occurred in adult males, 1 in an adult female, and 3 in children. The occupation or place of residence of most of these cases was such that contact with wild rats might be expected. Eight of the 40 cases were in colored persons, the others in white persons.

4. Of the 40 cases, 6 terminated fatally.

5. With the freshly prepared formalinized antigen of type I *Leptospira icterohaemorrhagiae* the agglutination titer of 5 cases ranged from 1:300 to 1:1,000; in eight cases the titers ranged from 1:3,000 to 1:10,000; the remaining 27 cases each gave a titer of about 1:30,000 or higher. The agglutination reactions in these dilutions were prompt and completed within 2 hours.

6. Sixty-one blood samples from 36 human cases of Weil's disease, after storage in the refrigerator at 5° C. from 169 to 1,078 days, were retested and, with 4 exceptions, were found to give strong agglutination reactions with type I *Leptospira icterohaemorrhagiae*. The agglutination titers of this group approached, or were identical with, the original agglutination titers.

7. Blood samples from 20 jaundiced dogs (from Louisiana, Nebraska, New York, Pennsylvania, and Virginia) likewise gave strong agglutination reactions with type I *Leptospira icterohaemorrhagiae* in dilutions of 1:30,000 and higher.

8. Virulent strains of *Leptospira icterohaemorrhagiae* were isolated from wild rats (*Rattus norvegicus*) captured in Detroit, Mich., in New York City, and in Washington, D. C.

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DIRECTORY OF STATE AND INSULAR HEALTH AUTHORITIES, 1941

The present directory lists only the personnel holding major administrative posts, i. e., chiefs of departments, divisions, bureaus, and special activities. Members of the board of health, other than the health officer, are not included.

The information has been collected from the State and insular health officers as of September 1, 1941. An asterisk (*) is used to indicate the fact that an officer has been reported to be a part-time employee. All periodicals and regular publications that were reported are listed.

ALABAMA STATE BOARD OF HEALTH

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Sanitation, Bureau of:

D. S. Abell, M. S. in S. E.

Vital Statistics, Bureau of:

L. V. Phelps, S. B. in P. H., director.

Publications:

Vital Statistics Bulletin—monthly.

Report of State Board of Health—yearly.

Report of Bureau of Vital Statistics—yearly.

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Juneau

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Phoenix

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Venereal Diseases, Bureau of:

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Vital Statistics, Bureau of:

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Publications:

California State Department of Public Health—weekly.

California State Department of Public Health—biennially.

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Venereal Disease Control, Division of:

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Frank S. Morrison, LL. B., director.

Publications:

Colorado State Board of Health Bulletin—bimonthly.

Report of Colorado State Division of Public Health—biennially.

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William C. Welling, B. A., director.

Publications:

Weekly Health Bulletin.

Connecticut Health Bulletin—monthly.

Annual Report of State Department of Health.

Annual Vital Statistics Report.

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Publications:

Morbidity Report—weekly.

Delaware Health News—quarterly.

Annual Report.

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Publications:

Monthly report by health department.

Monthly statement of average grade of milk and ice cream sold.

Annual report by health officer

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Florida Health Notes—monthly.

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Publications:

Georgia's Health—monthly.

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Publications:

Annual Report, Board of Health, Territory of Hawaii.

Monthly Bulletin, "Hawaii Health Messenger."

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R. H. Woodruff, M. D., registrar.

Publications:

Annual Report.

Manual and Outline of Procedure for Health Officers for the Control of Communicable Diseases.

Memorandum to Health Officers—weekly.

Bulletin of Communicable Disease Report—biweekly.

Special Reports—quarterly or oftener.

Illinois Health Messenger—semimonthly.

Educational Health Circulars—annually.

Catalog of Educational Materials—semiannually.

Press Releases—weekly or oftener.

Radio Broadcasts—weekly (6 months' season).

Over the Spillway—quarterly.

The Digester—quarterly.

Time and Temperature—quarterly.

The New Swimm'n' Hole—quarterly.

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J. W. Jackson, M. D., B. A., State epidemiologist

Community Sanitation, Bureau of:

Robert Helder, assistant State director.

Dairy Products, Bureau of:

John Taylor, B. S., M. S., chief.

Food and Drugs, Bureau of:

Joseph C. Schneider, A. B., chief.

Health and Physical Education, Bureau of:

***T. B. Rice, M. D.**, chief.

Industrial Hygiene, Bureau of:

Louis W. Spolyar, M. D., chief.

Legal Administration, Bureau of:

Francis Hamilton, LL. B., deputy attorney general.

Local Health Administration, Bureau of:

George M. Brother, M. D., M. P. H., chief.

Maternal and Child Health, Bureau of:

***Howard B. Mettel, M. D.**, chief.

Public Health Nursing, Bureau of:

Eva F. MacDougall, R. N., A. B., chief.

Sanitary Engineering, Bureau of:

B. A. Poole, B. S., C. E., chief engineer.

Venereal Diseases, Bureau of:

George W. Bowman, M. D., chief.

Vital Statistics, Bureau of:

H. M. Wright, chief.

Publications:

Monthly Bulletin of the Indiana State Board of Health.

Sewage Gas—quarterly.

IOWA STATE DEPARTMENT OF HEALTH

Des Moines

Administration, Public Health:

Walter L. Biering, M. D., F. A. P. H. A., F. A. C. P., Hon. R. C. P. Edin., commissioner.

Cancer Control, Division of:

Edmund G. Zimmerer, M. D., M. P. H., director.

Local Health Services:

Marvin F. Haygood, M. D., M. P. H., director.

Maternal and Child Health, Division of:

John M. Hayek, M. D., M. P. H., director.

Preventable Disease, Division of:

Carl F. Jordan, A. B., M. D., M. P. H., director.

Public Health Education, Division of:

Wm. H. Schultz, B. S. in J., director.

Public Health Engineering and Industrial Hygiene, Division of:

A. H. Wieters, B. S., M. S. San. Eng., director.

Public Health Nursing, Division of:

Marle Neuschaefer, R. N., acting director.

State Hygienic Laboratories, Division of:

M. E. Barnes, M. D., Dr. P. H., director.

Tuberculosis Control, Division of:

Charles K. McCarthy, M. D., director.

Venereal Disease Control:

R. M. Sorensen, M. S., M. D., C. P. H., director.

Vital Statistics, Division of:

Erie P. Pfeiffer, M. D., C. P. H., director.

Publications:

Health Message—weekly.

Press releases.

Quarterly and special bulletins.

Biennial reports.

KANSAS STATE BOARD OF HEALTH

Topeka

Secretary and Executive Officer:

F. P. Helm, M. D.

Child Hygiene, Division of:

H. R. Ross, M. D., director.

Communicable Diseases, Division of:

C. H. Kinnaman, M. D., director.

Dental Hygiene, Division of:

Leon R. Kramer, M. P. H., D. D. S., director.

Food and Drugs, Division of:

Evan Wright, acting assistant chief.

Local Health, Division of:

R. F. Boyd, M. D., M. P. H., director.

Public Health Education, Division of:

Bertha Campbell, director.

Public Health Laboratories, Division of:

Chas. H. Hunter, Ph. D., director.

Sanitation, Division of:

Earnest Boyce, M. S., chief engineer

Tuberculosis, Division of:

F. C. Beelman, M. D., director.

Venereal Diseases, Division of:

Robert H. Riedel, M. D., M. P. H., director.

Vital Statistics, Division of:

Minnie Fleming, State registrar

Publications:

Morbidity Report—weekly.

The News Letter—monthly.

Student Accidents—yearly.

Kansas Accidental Deaths—yearly.

The Biennial Report.

KENTUCKY STATE DEPARTMENT OF HEALTH

Louisville

State Health Commissioner:

A. T. McCormack, M. D., D. P. H.

P. E. Blackerby, M. D., assistant State health commissioner.

Bacteriology, Bureau of:

Lillian H. South, M. D., director.

Budget, Bureau of:

Elva Grant, director.

Communicable Diseases, Division of:

Fred W. Caudill, M. D., C. P. H., director.

County Health Work, Bureau of:

P. E. Blackerby, M. D., director.

Dental Health, Bureau of:

J. F. Owen, D. D. S., director.

Epidemiology, Bureau of:

Fred W. Caudill, M. D., C. P. H., director.

Foods, Drugs, and Hotels, Bureau of:

Sarah Vance Dugan, M. S., director.

Maternal and Child Health, Division of:

C. B. Crittenden, M. D., M. P. H., director.

Mental Hygiene, Bureau of:

O. M. Goodloe, M. D., C. P. H., acting director.

Public Health Education, Bureau of:

John W. Kelly, M. A., director.

Public Health Nursing, Bureau of:

Margaret L. East, R. N., director.

Registration, Bureau of:

A. T. McCormack, M. D., D. P. H., director.

Sanitary Engineering, Bureau of:

F. C. Dugan, C. E., director.

Trachoma, Bureau of:

Robert Sory, M. D., director.

Tuberculosis, Bureau of:

John B. Floyd, M. D., director.

Venereal Diseases, Bureau of:

Russell H. Teague, M. D., M. P. H., director.

Vital Statistics, Bureau of:

J. F. Blackerby, director.

Publications:

Bulletin, State Department of Health—monthly.

Service Sifter—monthly.

Vital Statistics Bulletin—yearly.

LOUISIANA STATE BOARD OF HEALTH

New Orleans

President, State Board of Health:

John H. Musser, M. D.

Administrative Services, Division of:

S. C. Newitt, chief.

Local Health Service, Division of:

Ford S. Williams, M. D., chief.

Laboratories, Division of:

Bacteriological Laboratory:

George H. Hauser, M. D.

Chemical Laboratory:

L. C. Andrews.

Preventive Medicine, Division of:

George M. Leiby, M. D., chief.

Crippled Children, Section of:

L. C. Spencer, M. D., consultant.

Dental Health, Section of:

Paul Cook, D. D. S., consultant.

Epidemiology, Section of:

W. L. Treuting, M. D., consultant.

Maternal and Child Health, Section of:

Virginia E. Webb, M. D., consultant.

Nutrition Services, Section of:

Margaret C. Moore, consultant.

Preventive medicine, Div. of—Continued.

Tuberculosis Control, Section of:

R. Alec Brown, M. D., consultant.

Venereal Disease Control, Section of:

A. B. Price, M. D., consultant.

Public Health Engineering, Division of:

John H. O'Neill, chief.

Food and Drugs, Section of:

J. W. Forbes, consultant.

Milk Control, Section of:

H. G. McAndrews, consultant.

Mosquito Control, Section of:

John L. Porter, consultant.

Water Supply and Waste Disposal, Section of:

F. W. Macdonald, consultant.

Public Health Statistics, Division of:

Lawrence A. Wilson, chief.

Public Relations and Public Health Education:

J. H. Randolph Feltus.

Publications:

Morbidity report—weekly.

Quarterly bulletin.

MAINE DEPARTMENT OF HEALTH AND WELFARE—BUREAU OF HEALTH

Augusta

Director of Health:

Roscoe L. Mitchell, M. D.

Communicable Diseases, Division of:

R. L. Mitchell, M. D., acting director.

Dental Health, Division of:

P. W. Woods, D. D. S., M. P. H., director.

Diagnostic Laboratories, Division of:

A. H. Morrell, M. D., director.

Maternal and Child Health, Division of:

C. N. Stanhope, M. D., acting director.

Public Health Nursing, Division of:

Helen F. Dunn, R. N., director.

Sanitary Engineering, Division of:

E. W. Campbell, D. P. H., director.

Venereal Disease Control, Division of:

R. P. Jones, M. D.

Vital Statistics, Division of:

P. B. Stinson, A. B., director.

Publications:

Vital Statistics Report—yearly.

MARYLAND STATE DEPARTMENT OF HEALTH

Baltimore

Director:

Robert H. Riley, M. D., Dr. P. H.

Dr. Charles H. Halliday, assistant director.

Bacteriology, Bureau of:

C. A. Perry, Sc. D., chief.

Chemistry, Bureau of:

W. F. Reindollar, Sc. D., chief.

Child Hygiene, Bureau of:

J. H. M. Knox, Jr., M. D., chief.

Communicable Diseases and Services for Crippled Children, Bureau of:

Charles H. Halliday, M. D., chief and epidemiologist.

Food and Drugs, Bureau of:

A. L. Sullivan, B. S., commissioner.

Legal Administration, Division of:

J. Davis Donovan, LL. B., chief.

Oral Hygiene, Division of:

R. C. Leonard, D. D. S., chief.

Personnel and Accounts, Division of:

W. N. Kirkman, chief.

Public Health Education, Division of:

Gertrude B. Knipp, A. B., chief.

Public Health Nursing, Division of:

Catherine Corley, R. N., nurse-instructor.

Sanitary Engineering, Bureau of:

G. L. Hall, chief.

Vital Statistics, Bureau of:

A. W. Hedrich, Sc. D., chief.

Publications:

Weekly Press Bulletin.

Monthly Bulletin.

Annual Report.

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

Boston

State Commissioner:

Paul J. Jakmauh, M. D.

Deputy Commissioner:

Alton S. Pope, M. D.

Administration, Division of:

Paul J. Jakmauh, M. D., director.

*Edward G. Huber, M. D., assistant director.

Adult Hygiene, Division of:

Herbert L. Lombard, M. D., director.

Biologic Laboratories, Division of:

Elliott S. Robinson, M. D., director.

Child Hygiene, Division of:

M. Louise Diez, M. D., director.

Communicable Diseases, Division of:

Roy F. Feemster, M. D., director.

Food and Drugs, Division of:

Hermann C. Lythgoe, B. S., director.

Genitoinfectious Diseases, Division of:

Ernest B. Howard, M. D., director.

Sanitary Engineering, Division of:

Arthur D. Weston, director.

Tuberculosis, Division of:

Alton S. Pope, M. D., director.

Publications:

Cancer Bulletin—monthly.

Bulletin of Genitoinfectious Diseases—monthly.

News Letter to Board of Health—bimonthly.

Contact—quarterly.

The Commonwealth—semiannually.

Annual Report.

MICHIGAN DEPARTMENT OF HEALTH

Lansing

Commissioner:

H. Allen Moyer, M. D.

E. V. Thiehoff, M. D., M. P. H., acting deputy commissioner.

Business Administration, Bureau of:

W. G. Stevenson, director.

Education, Bureau of:

Marjorie Delavan, A. B., director.

Engineering, Bureau of:

John M. Hepler, C. E., director.

Epidemiology, Bureau of:

Wallace M. Chapman, M. D., M. P. H., director.

Industrial Hygiene, Bureau of:

K. E. Markuson, M. D., M. P. H., director.

Laboratories, Bureau of:

C. C. Young, D. P. H., director.

Local Health Services, Bureau of:

E. V. Thiehoff, M. D., M. P. H., director.

Maternal and Child Health, Bureau of:

Lillian R. Smith, M. D., director.

Public Health Dentistry, Bureau of:

William R. Davis, D. D. S., director.

Public Health Nursing, Bureau of:

Helene B. Buker, R. N., M. A., director.

Records and Statistics, Bureau of:

Gertrude Pienta, acting director.

Tuberculosis Control, Bureau of:

George A. Sherman, M. D., director.

Publications:

Statistical Report of Communicable Diseases—weekly.

Michigan Public Health—monthly.

Interdepartmental Circular—bi-monthly.

Statistical Report, Bureau of Records and Statistics—yearly.

Annual Report.

MINNESOTA DEPARTMENT OF HEALTH

St. Paul

Secretary and Executive Officer:

A. J. Chesley, M. D.

Administration, Division of:

O. C. Pierson, director.

Birth and Death Records and Vital Statistics, Division of:

Gerda C. Pierson, director.

Child hygiene, Division of:

Viktor O. Wilson, M. D., M. P. H., director.

Dental Health Education:

Vern D. Irwin, D. D. S., P. H., dentist in charge.

Hotel Inspection, Division of:

Theo. T. Wold, director.

Industrial Health, Division of:

Leslie W. Foker, M. D., M. P. H., director.

Influenza Research Laboratory:

Carl M. Eklund, M. D., senior epidemiologist in charge.

Local Health Services, Division of:

R. N. Barr, M. D., M. P. H., director.

Preventable Diseases, Division of:

O. McDaniel, M. D., director.

Public Health Education:

Donald A. Dukelow, M. D., M. P. H., physician in charge.

Public Health Nursing, Division of:

Olivia T. Peterson, R. N., director.

Sanitation, Division of:

H. A. Whittaker, B. A., director.

Venereal Disease Control:

Ralph R. Sullivan, M. D., assistant director in charge, Preventable Disease Division.

MISSISSIPPI STATE BOARD OF HEALTH

Jackson

Administration:

Felix J. Underwood, M. D., F. A. C. P., secretary and executive officer.

*R. N. Whitfield, M. D., assistant secretary.

County Health Work:

J. A. Milne, M. D., M. P. H., director.

Field Unit:

H. B. Cottrell, M. D., C. P. H., supervisor.

Health Education:

Eleanor Hassell, B. A., M. P. H., supervisor.

Industrial Hygiene and Factory Inspection:

J. W. Dugger, M. D., director.

Laboratories:

H. C. Ricks, M. D., M. P. H., director.

Library:

Louise Williams, librarian.

Malaria Control:

Geo. E. Riley, M. D., C. P. H., supervisor.

Maternal and Child Health:

Maude M. Gerdes, M. D., director.

Mental Hygiene:

Estelle A. Magiera, M. D., supervisor.

Milk Sanitation:

N. M. Parker, D. V. M., supervisor.

Mouth Health:

Gladys Eyrich, B. L., supervisor.

Nutrition:

Mary Stansel, B. A., supervisor.

Preventable Disease Control:

A. L. Gray, M. D., M. P. H., director.

Public Health Engineering:

H. A. Kroeze, C. E., director.

Public Health Nursing:

Mary D. Osborne, R. N., supervisor.

Tuberculosis State Sanatorium:

Henry Boswell, M. D., F. A. C. P., superintendent.

Tuberculosis Control Field Unit:

Wm. D. Hickerson, M. D., supervisor.

Venereal Disease Control:

D. V. Galloway, M. D., M. P. H., supervisor.

Vital Statistics:

R. N. Whitfield, M. D., director.

Publication:

Biennial Report.

MISSOURI STATE BOARD OF HEALTH

Jefferson City

State Health Commissioner:

James Stewart, M. D.

Business Administration Division:

A. Louis Landwehr, director.

Child Hygiene Division:

M. L. Gentry, M. D., director.

Cosmetology and Hairdressing Division:

Mrs. Ramona Grimsley, director.

Food and Drug Division:

Wm. C. Cruce, director.

Laboratories Division:

C. F. Adams, M. D., director.

Local Health Division:

John W. Williams, M. D., M. P. H., director.

Pneumonia Control and Epidemiology:

W. H. Aufrane, M. D., director.

Public Health Dentistry:

Allen Gruebbel, D. D. S., M. P. H., director.

Public Health Education:

Fred Rector, director.

Public Health Engineering:

W. Scott Johnson, B. S., M. S., chief.

Public Health Nursing:

Ella Mae Hott, R. N., director.

Venereal Disease Control:

Edgar B. Johnwick, M. D., acting director.

Vital Statistics Division:

James Carroll Pinkley, director.

Publications:

Morbidity Report—weekly.

Monthly Report.

Annual Report.

MONTANA STATE BOARD OF HEALTH**Helena****Administration:**

W. F. Cogswell, M. D., C. M., secretary and executive officer.

Communicable Disease, Division of:

B. K. Kilbourne, M. D., epidemiologist.

Food and Drugs, Division of:

Donald E. Warner, B. S., director.

Hygienic Laboratory:

Edith Kuhns, B. S., director.

Industrial Hygiene, Division of:

L. M. Farner, M. D., A. B., C. P. H., director.

Maternal and Child Health, Division of:

Edythe P. Hershey, M. D., B. S., director.

Rural Health Work:

B. K. Kilbourne, M. D., director.

Vital Statistics, Division of:

L. L. Benepe, B. S., deputy State registrar.

Water and Sewage, Division of:

H. B. Foote, B. A., A. M., C. E., director.

Publications:

Report of Communicable Diseases—weekly.

Biennial Report of State Board of Health.

Public Health Nursing Notes—monthly.

Health-in-Education Leaflets—quarterly.

NEBRASKA STATE DEPARTMENT OF HEALTH**Lincoln****Director of Health:**

A. L. Miller, M. D., F. A. C. S.

Community Sanitation:

Harry F. Glynn, assistant director.

Dental Hygiene, Division of:

J. R. Thompson, D. D. S., M. P. H., director.

Laboratory, Division of:

L. O. Vose, M. S., P. H. E., director.

Maternal and Child Health, Division of:

R. H. Loder, M. D., director.

Public Health Engineer:

T. A. Filipi, M. S.

Public Health Nursing Consultant:

Eleanor Palmquist, R. N.

Tuberculosis, Survey of Human:

E. A. Rogers, M. D., director.

Venereal Disease, Division of:

R. A. Frary, M. D., assistant epidemiologist.

Vital Statistics, Division of:

Grace Freidell.

NEVADA STATE DEPARTMENT OF HEALTH**Carson City****State Health Officer:**

Edward E. Hamer, M. D.

Community Sanitation Program:

Webster B. Hunter, B. S., district supervisor.

Dental Hygiene, Division of:

O. M. Siefert, D. D. S., director.

Laboratories, Division of:

Vera E. Young, M. A. in P. H., director.

Local Health Administration and Epidemiology, Division of:

Gerald J. Sylvain, M. D., M. P. H., director and State epidemiologist.

Maternal and Child Health and Crippled Children's Services, Division of:

Wm. Morse Little, M. D., director.

Public Health Engineering, Division of:

W. W. White, E. M., C. P. H., director.

Tuberculosis Control Program:

Edward E. Hamer, M. D., director.

Venereal Disease Control, Division of:

***Byron H. Caples, M. D.**, director.

Vital Statistics, Division of:

John J. Sullivan, Jr., M. P. H., director.

Publications:

State Department of Health Biennial Report.

NEW HAMPSHIRE STATE BOARD OF HEALTH**Concord****Secretary and Executive Officer:**

Travis P. Burroughs, M. D., A. B., M. P. H.

Chemistry and Sanitation, Division of:

Charles D. Howard, S. B., director.

Crippled Children's Services, Division of:

Mary M. Atchison, M. D., A. B., director.

Epidemiology and Local Health Work, Division of:

Mary M. Atchison, M. D., A. B., acting director.

Laboratory of Hygiene:

Travis P. Burroughs, M. D., A. B., M. P. H., director.

Maternal and Child Health, Division of:

Mary M. Atchison, M. D., A. B., director.

Public Health Nursing, Division of:

Mary D. Davis, R. N., director.

Venereal Disease Control, Division of:

Alfred L. Frechette, M. D., director.

Vital Statistics, Department of:

Travis P. Burroughs, M. D., A. B., M. P. H., registrar.

Publications:

New Hampshire Health News—monthly.

Registration Report—biennially.

Report of the State Board of Health—biennially.

NEW JERSEY STATE DEPARTMENT OF HEALTH

Trenton

Director:

J. Lynn Mahaffey, M. D.

Administration, Bureau of:

E. R. Outcalt, chief.

Bacteriology, Bureau of:

John Mulcahy, chief.

Chemistry, Bureau of:

John E. Bacon, C. H. E., chief.

Dental Health Program:

J. M. Wisan, D. D. S., consultant.

Engineering, Bureau of:

Harry P. Croft, C. E., chief.

Food and Drugs, Bureau of:

Walter W. Scofield, B. A., B. S., chief.

Local Health Administration, Bureau of:

William H. MacDonald, B. L., M. S., chief.

Maternal and Child Health, Bureau of:

*Julius Levy, M. D., consultant.

Milk Sanitation:

I. H. Shaw, D. V. M., veterinarian.

Negro Health Program:

J. Earl Stuart, M. D., consultant.

Public Health Nursing, Advisory Service:

Elizabeth Curtis, R. N., consultant.

Shellfish Sanitation:

Edwin G. Applegate, B. S., senior chemist.

Venereal Disease Control, Division of:

Daniel Bergsma, M. D., P. H., chief.

Vital Statistics, Bureau of:

Walter R. Scott, chief.

Publications:

Public Health News—bimonthly.

Annual Report of the Department of Health of the State of New Jersey.

NEW MEXICO DEPARTMENT OF PUBLIC HEALTH

Santa Fe

Administration, Division of:

James R. Scott, M. D., Ph. D., director.

County Health Administration, Division of:

C. H. Douthirt, M. D., director.

Engineering Division:

Paul S. Fox, B. S., M. S., C. E., public health engineer.

Public Health Laboratory, State:

Myrtle Greenfield, M. A., director.

Public Health Nursing, Division of:

Fannie T. Warneke, director.

Venereal Disease Control, Division of:

E. F. McIntyre, M. D., C. P. H., director.

Vital Statistics, Division of:

Billy Tober, State registrar.

Publications:

Morbidity Statistics Bulletin—weekly.

Vital Statistics Bulletin—monthly.

The New Mexico Health Officer—quarterly.

NEW YORK STATE DEPARTMENT OF HEALTH

Albany

Commissioner:

Edward S. Godfrey, Jr., M. D.

Paul B. Brooks, M. D., deputy commissioner.

Accounts, Division of:

Clifford C. Shoro, director.

Administrative Officer:

Edmund Schreiner, LL. B.

Cancer Control, Division of:

Louis C. Kress, M. D., director.

Communicable Diseases, Division of:

James E. Perkins, M. D., director.

Embalming and Undertaking, Bureau of:

Grace Haswell, principal clerk.

Laboratories and Research, Division of:

Augustus B. Wadsworth, M. D., director.

Local Health Administration:

V. A. Van Volkenburgh, M. D., assistant commissioner.

Malignant Diseases, State Institute for Study of:

Burton T. Simpson, M. D., director.

Maternity, Infancy and Child Hygiene, Division of:

Elizabeth M. Gardiner, M. D., director.

Medical Administration:

Edward S. Rogers, M. D., acting assistant commissioner.

Narcotic Control, Bureau of:

Ralph M. Weisman, Ph. G., acting supervisor.

Orthopedics, Division of:

Walter J. Craig, M. D., director.

Public Health Education, Division of:

Burt R. Rickards, S. B., director.

Public Health Nursing, Division of:

Marian W. Sheahan, R. N., director.

Sanitation, Division of:

Charles A. Holmquist, S. B., director.

Syphilis Control, Division of:

William A. Brumfield, M. D., director.

Tuberculosis, Division of:

William Siegal, M. D., director.

Tuberculosis Hospitals:

Robert E. Plunkett, M. D., general superintendent.

Vital Statistics, Division of:

J. V. DePorte, Ph. D., director.

Publications:

Health News—weekly.

Vital Statistics Review—monthly.

Annual Report.

NORTH CAROLINA STATE BOARD OF HEALTH

Raleigh

Secretary and State Health Officer:

Carl V. Reynolds, M. D.

G. M. Cooper, M. D., assistant State health officer.

County Health Work, Division of:

R. E. Fox, M. D., director.

Epidemiology and Venereal Disease Control, Division of:

J. C. Knox, M. D., director.

Health Education, Crippled Children's Work, Maternal and Child Health Service, Division of:

G. M. Cooper, M. D., director.

Industrial Hygiene, Division of:

T. F. Vestal, M. D., director.

Laboratories, Division of:

John H. Hamilton, M. D., director.

Oral Hygiene, Division of:

Ernest A. Branch, D. D. S., director.

Sanitary Engineering and Malaria Control, Division of:

Warren H. Booker, C. E., director.

School Health Coordinating Service, Division of:

Walter Wilkins, M. D., coordinator.

Vital Statistics, Division of:

R. T. Stimpson, M. D., director.

Publications:

The Health Bulletin—monthly.

NORTH DAKOTA STATE DEPARTMENT OF HEALTH

Bismarck

Administration, Division of:

Maysil M. Williams, M. D., M. P. H., State health officer.

Child Hygiene, Division of:

Viola Russell, M. D., director.

Laboratories, Division of:

Melvin E. Koons, M. S., C. P. H., director.

Preventable Diseases, Division of:

Frank J. Hill, M. D., director.

Sanitary Engineering, Division of:

Harry Hanson, B. S., M. S., acting director.

Vital Statistics, Division of:

Margaret D. Lang, B. S., director.

Publications:

North Dakota's Health—weekly.

Biennial Report.

OHIO DEPARTMENT OF HEALTH

Columbus

State Director of Health:

R. H. Markwith, M. D.

James E. Bauman, assistant.

Adult Hygiene Division:

John B. Kistler, M. D., M. P. H., chief.

Audits and Reports Division:

Harry C. Eader, chief.

Child Hygiene Division:

Susan P. Souther, A. B., M. D., M. P. H., chief.

Dental Division:

H. B. Millhoff, D. D. S., chief.

Engineering Division:

F. H. Waring, B. S., San. E., B. S., C. E., chief.

Environmental Sanitation Division:

Paul M. Holmes, B. C. E., chief.

Laboratory Division:

Leo F. Ey, chief.

Legal Division:

James E. Bauman, chief.

Nursing Division:

S. Gertrude Bush, R. N., chief.

Vital Statistics Division:

William Veigel, chief.

OKLAHOMA STATE DEPARTMENT OF PUBLIC HEALTH

Oklahoma City

Commissioner:

Grady F. Mathews, M. D.

J. P. Folan, assistant commissioner.

J. A. Morrow, M. D., deputy commissioner.

Accounting:

Floyd Harrington, B. S., auditor.

Epidemiology:

J. Y. Battenfield, M. D., director.

Food and Drug Division:

J. P. Folan, director.

Health Education:

Hugh Payne, director.

Industrial Hygiene:

E. C. Warkentin, B. S., M. S. P. H. E., engineer.

Laboratories:

F. R. Hassler, M. D., M. P. H., director.

Local Health Service, Bureau of:

J. W. Shackelford, M. D., M. P. H., director.

Malaria Control:

Milo Simmonds, B. S., engineer.

Maternal and Child Health:

J. T. Bell, M. D., director.

Milk Control:

Wm. J. Wyatt, B. S., M. P. H., specialist.

Nutritionist:

Maxine Turner, B. S.

Preventive Dentistry:

F. P. Bertram, D. D. S., M. P. H., director.

Public Health Engineering, Bureau of:

H. J. Darcey, B. S., director.

Public Health Nursing:

Josephine L. Daniel, R. N., B. S., director.

Technical Field Unit:

John F. Hackler, M. D., M. P. H., director.

Tuberculosis Control:

R. H. Gingles, M. D., director.

Venereal Disease Control:

Eugene A. Gillis, M. D., M. P. H., director.

Vital Statistics:

Clyde F. Ross, LL. B., director.

Publications:

The Sooner Sanitarian--monthly.
Annual Report.

OREGON STATE BOARD OF HEALTH

Portland

State Health Officer:

Frederick D. Stricker, M. D.

Bedding and Upholstery Inspector:

Allen French.

Cancer Control, Division of:

*Raymond Watson, M. D., director.

Dental and Oral Hygiene, Division of:

Floyd H. DeCamp, D. D. S., consultant.

Hygienic Laboratory:

Wm. Levin, Dr. P. H., director.

Maternal and Child Hygiene, Division of:

Harold M. Erickson, M. P. H., director.

Plumbing Inspector:

Arthur J. Farrell.

Public Health Education, Division of:

Ethel Mealy, M. A., consultant.

Public Health Nursing, Division of:

Lucile Perozzi, M. A., director.

Sanitary Engineering, Division of:

Curtiss M. Everts, Jr., director.

Tourist Campground Inspector:

A. R. Ashton.

Venereal Disease Control, Division of:

Sam D. Allison, M. D., director.

Vital Statistics, Division of:

Deward Waggoner, M. S. P. H., assistant registrar.

Publications:

Weekly Bulletin.

PENNSYLVANIA DEPARTMENT OF HEALTH

Harrisburg

Secretary:

A. H. Steward, M. D., deputy secretary, acting secretary of health.

Accounts, Division of:

E. J. MacNamara, chief.

Cancer Control, Division of:

Stanley P. Reimann, M. D., chief.

Comptroller:

Clinton T. Williams.

Dental Division:

Linwood G. Grace, D. D. S., chief.

Health Conservation, Bureau of:

J. Moore Campbell, M. D., director.

Industrial Hygiene, Bureau of:

William B. Fulton, M. D., director.

Laboratories, Division of:

Verner Nisbet, M. D., director.

Maternal and Child Health, Bureau of:

Paul Dodds, M. D., director.

Milk Sanitation, Bureau of:

Ralph E. Irvin, director.

Narcotic Drug Control, Division of:

Frank D. Armstrong, chief.

Pneumonia Control, Division of:

Dale C. Stahle, M. D., chief.

Public Health Nursing, Bureau of:

Alice M. O'Halloran, R. N., director.

Sanitary Engineering, Bureau of:

Howard E. Moses, C. E., director.

School Medical Inspection, Division of:

John W. German, Jr., chief.

Supplies and Biologicals, Division of:

Walter F. Heintzelman, chief.

Tuberculosis Control, Bureau of:

Charles R. Reynolds, M. D., director.

Venereal Diseases, Division of:

Edgar S. Everhart, M. D., chief.

Vital Statistics, Bureau of:

Tom E. Williams, director.

Publications:

Pennsylvania's Health—monthly.

PHILIPPINE ISLANDS BUREAU OF HEALTH¹

Manila

Director:

Eusebio D. Aguilar, M. D.

Administration, Division of:

Felipe Arenas, M. D., C. P. H., chief.

Epidemiology, Division of:

Jose Guidote, M. D., C. P. H., chief.

Hospitals, Division of:

Sulpico Chiyuto, M. D., chief.

Maternal and Child Hygiene, Division of:

Enrique F. Ochoa, M. D., C. P. H., chief.

National Charity Clinics:

Vicente Kierulff, M. D., medical supervisor.

Sanitation, Division of:

Gabriel Intengan.

Publications:

Annual Report of the Office of the Commissioner of Health and Welfare.

Annual Report of the Bureau of Health.

Monthly Bulletin of the Bureau of Health.

The "Health Messenger" of the Bureau of Health—monthly.

¹ No information was obtained from the Philippine Islands covering personnel employed as of September 1, 1941. The information listed represents that which was published in 1940.

PUERTO RICO DEPARTMENT OF HEALTH

San Juan

Commissioner of Health:

E. Garrido Morales, M. D., Dr. P. H.

R. Berríos Berdecia, M. D., assistant commissioner, section of public health.

Pedro S. Malaret, M. D., assistant commissioner, section of public welfare.

Biological Laboratory:

Ó. Costa Mandry, M. D., C. T. M., director.

Chemical Laboratory:

Rafael del Valle Sárraga, A. B., B. S., Ph. C., M. T., director.

Epidemiology and Vital Statistics, Bureau of:

Abel de Juan, M. D., M. P. H., chief.

General Inspection of Construction and Plumbing, Bureau of:

José Cantellops, S. E., chief.

General Sanitary Inspection, Bureau of:

W. F. Lippitt, M. D., chief.

Health Education Office:

Thomás Blanco, M. D., director.

Malaria, Bureau of:

Antonio Arbona, M. D., chief.

Maternal and Infant Hygiene, Bureau of:

Marta Robert, M. D., chief.

Property and Accounts, Division of:

Rafael M. Méndez, Ph. G., chief.

Public Health Units, Bureau of:

José Chaves, M. D., chief.

Rural Medical Centers, Division of:

José Alum Pérez, M. D., chief.

Sanitary Engineering, Bureau of:

Juan G. Figueroa, C. E., chief.

Social Welfare, Bureau of:

Beatriz Lassalle, chief.

Tuberculosis, Bureau of:

J. Rodríguez Pastor, M. D., chief.

Venereal Diseases, Division of:

Ernesto Quintero, M. D., chief.

Publications:

Puerto Rico Health Bulletin—monthly.

RHODE ISLAND DEPARTMENT OF HEALTH

Providence

Director:

Edward A. McLaughlin, M. D., State registrar.

Administration, Division of:

Edward P. Conaty, Ph. B., business manager.

Crippled Children, Division of:

*William A. Horan, M. D., chief.

Examiners, Division of:

Thomas B. Casey, Ph. B., chief.

Laboratories, Division of:

Edgar J. Staff, A. M., M. Sc., chief.

Maternal and Child Health, Division of:

Francis V. Corrigan, M. D., chief.

Narcotic Drugs and Pharmacies, Division of:

Joseph J. Cahill, drugs control administrator.

Preventable Diseases, Division of:

William P. Shields, M. D., epidemiologist.

Sanitary Engineering, Division of:

Charles L. Pool, M. Sc., chief.

State Sanatorium, Division of:

Ubaldo E. Zambarano, M. D., superintendent.

Vital Statistics, Division of:

Genevieve E. Dolan, assistant State registrar.

Publications:

Annual Report.

Registration Report—yearly.

SOUTH CAROLINA STATE BOARD OF HEALTH

Columbia

State Health Officer:

James A. Hayne, M. D.

Administration, Division of:

James A. Hayne, M. D.

Cancer Control, Division of:

C. L. Guyton, M. D., director.

Communicable Diseases, Division of:

G. E. McDaniel, M. D., director.

Crippled Children, Division of:

H. G. Callison, M. D., director.

Dental Division:

G. A. Bunch, D. D. S., director.

Hygienic Laboratory:

H. M. Smith, M. D., director.

Industrial Hygiene, Division of:

Harry F. Wilson, M. D., director.

Maternal and Child Health, Division of:

R. W. Ball, M. D., director.

Rural Sanitation and County Health Work:

Ben F. Wyman, M. D., director.

Tuberculosis Sanatorium:

Col. Wm. F. Moncrief, M. D., superintendent.

Venereal Disease Control:

Sedgwick Simons, M. D., director.

Vital Statistics Department:

M. B. Woodward, M. D., assistant State registrar.

Publications

Annual Report.

SOUTH DAKOTA STATE BOARD OF HEALTH

Pierre

State Health Officer:

J. F. D. Cook, M. D., F. A. C. S.

G. J. VanHeuvelen, M. D., M. P. H., assistant.

Administration, Division of:

J. F. D. Cook, M. D., F. A. C. S., superintendent.

Epidemiology and Venereal Diseases, Division of:

G. J. VanHeuvelen, M. D., M. P. H., director.

Laboratories, Division of:

*J. C. Ohlmacher, M. D., director.

Maternal and Child Health, and Crippled Children, Division of:

A. Triolo, M. D., M. P. H., director.

Medical Licensure, Division of:

J. F. D. Cook, M. D., F. A. C. S., superintendent.

Public Health Nursing, Division of:

Alice Olson, R. N., director.

Records and Accounts, Division of:

Esther Kempter, auditor and chief clerk.

Sanitary Engineering, Division of:

W. W. Towne, C. E., M. S., director.

Vital Statistics, Division of:

J. F. D. Cook, M. D., F. A. C. S., special agent.

Publications:

Epidemiology Report—weekly.

The Clarifier—monthly.

Vital Statistics Report—monthly.

Annual Report (Vital Statistics).

Biennial Report (All Divisions).

TENNESSEE DEPARTMENT OF PUBLIC HEALTH

Nashville

Commissioner:

W. C. Williams, M. D., C. P. H.

Laboratories, Division of:

Cooper Brougher, B. S., acting director.

Local Health Service:

Monroe F. Brown, M. D., C. P. H., acting director.

Preventable Diseases, Division of:

C. B. Tucker, M. D., C. P. H., director.

Sanitary Engineering, Division of:

Howard D. Schmidt, B. E., director.

Tuberculosis Control, Division of:

R. S. Gass, M. D., C. M., director.

Vital Statistics, Division of:

Ruth R. Puffer, A. B.

Publications:

Health Briefs—monthly.

Monthly News Letter.

Morbidity Statistics—monthly.

Annual Report of the Department of Public Health.

Vital Statistics Bulletin—yearly.

Morbidity Bulletin—yearly.

Annual Health Works' Conference Proceedings.

Biennial Report of the Department of Public Health.

TEXAS STATE DEPARTMENT OF HEALTH

Austin

State Health Officer:

Geo. W. Cox, M. D.

Dental Health:

Edward Taylor, D. D. S., director.

Engineering, Bureau of:

V. M. Ehlers, C. E., consultant.

Food and Drugs, Bureau of:

F. D. Brock, Ph.G., director.

Industrial Hygiene Division:

C. A. Nau, M. A., M. D., director.

Laboratories, Bureau of:

S. W. Bohls, M. D., director.

Local Health Services:

G. W. Luckey, M. D., director.

Maternal and Child Health:

J. M. Coleman, M. D., M. P. H., F. A. A. P., director.

Public Health Education:

L. E. Bracy, B. A., director.

Tuberculosis Division:

H. E. Smith, M. D., F. A. C. P., director.

Venereal Disease Division:

A. M. Clarkson, M. D., M. P. H., director.

Vital Statistics, Bureau of:

W. A. Davis, M. D., director.

Publications:

Morbidity Statistics Bulletin—weekly.

The Bulletin—monthly.

Good Morning Judge—monthly.

Biennial Reports.

Information Service—no dates established.

UTAH STATE BOARD OF HEALTH

Salt Lake City

State Health Commissioner:

Wm. M. McKay, M. D., M. P. H.

Comptroller and Personnel Director:

T. K. Callister, M. B. A.

Crippled Children's Service, Division of:

A. C. Thurman, M. D., C. P. H., director.

Dental Health, Division of:

R. C. Dalgleish, D. D. S., director.

Engineering and Sanitation, Division of:

Lynn M. Thatcher, B. S., director.

Epidemiology:

Wm. M. McKay, M. D., M. P. H., director.

Fiscal Officer:

Verna Durrant.

Industrial Hygiene, Division of:

J. L. Jones, M. D., Dr. P. H., director.

Laboratories, Division of:

E. H. Bramhall, B. S., director.

Local Health Administration, Division of:

D. D. Carr, M. D., C. P. H., director.

Maternal and Child Health, Division of:

Lela J. Beebe, M. D., director.

Public Health Nursing, Division of:

Vera Klingman, P. H. N., B. S., director.

Venereal Disease Control, Bureau of:

W. W. Bigelow, M. D., C. P. H., director.

Vital Statistics, Division of:

Eva W. Ramsey, director and deputy State registrar.

Publications:

Communicable Disease Report—weekly.

"MCH News Letter"—monthly.

Utah Health Bulletin—quarterly.

VERMONT DEPARTMENT OF PUBLIC HEALTH

Burlington

Secretary and Executive Officer:

C. F. Dalton, M. D.

Communicable Diseases and Venereal Disease Control Division:

F. S. Kent, M. D., director.

Crippled Children's Division:

Lillian E. Kron, R. N., director.

Laboratory of Hygiene:

C. F. Whitney, M. D., director.

Maternal and Child Health Division:

Paul D. Clark, M. D., director.

Public Health Nursing:

Nellie M. Jones, R. N., director.

Sanitary Engineering:

E. L. Tracy, C. E., director.

Tuberculosis and Industrial Hygiene Division:

H. W. Slocum, A. B., director.

Publications:

Modern Health Crusader—five times a year.
Biennial Report.

VIRGINIA STATE DEPARTMENT OF HEALTH

Richmond

Administration:

I. C. Riggan, M. D., State health commissioner.

Communicable Diseases, Bureau of:

William Grossmann, M. D., director.

Crippled Children's Bureau:

E. C. Harper, M. D., director.

Health Education, Bureau of:

J. C. Funk, Sc. D., director.

Industrial Hygiene, Bureau of:

J. B. Porterfield, M. D., director.

Laboratories, Bureau of:

Adah Corpening, director.

Maternal and Child Health, Bureau of:

A. L. Carson, M. D., director.

Mouth Hygiene, Division of:

N. T. Ballou, D. D. S., director.

Public Health Nursing, Bureau of:

Mary I. Mastin, R. N., director.

Rural Health, Bureau of:

L. J. Roper, M. D., director.

Sanitary Engineering, Bureau of:

Richard Messer, C. E., director.

Tuberculosis Out-Patient Service:

E. C. Harper, M. D., director.

Venereal Disease Control, Division of:

E. M. Holmes, Jr., M. D., director.

Vital Statistics, Bureau of:

W. A. Plecker, M. D., registrar.

Publications:

Health Bulletin—monthly.

VIRGIN ISLANDS DEPARTMENT OF HEALTH

Charlotte Amalie

Commissioner of Health, Chief Municipal Physician and Registrar, St. Thomas:

Knud Knud-Hansen, M. D., F. A. C. S.

Assistant Commissioner of Health, Chief Municipal Physician, and Registrar, St. Croix:

Meredith Hoskins, M. D.

Sanitation Service, St. Thomas:

Cyril Creque, chief clerk.

Publications:

Report of Notifiable Diseases—monthly.

WASHINGTON STATE DEPARTMENT OF HEALTH

Seattle

Director:

Donald G. Evans, M. D., B. S., M. P. H.,
Dr. P. H.

Crippled Children, Division of:

James W. Haviland, M. D., A. B., chief.

Epidemiology and Venereal Disease Control, Division of:

L. A. Dewey, M. D., B. Sc., Dr. P. H., chief.

Laboratory, Division of:

A. U. Simpson, M. D., B. S., chief.

Maternal and Child Hygiene, Division of:

Percy F. Guy, M. D., M. P. H., chief.

Public Health Engineering, Division of:

M. S. Campbell, B. S., M. S., chief.

Public Health Nursing, Division of:

Anna R. Moore, R. N., B. S., C. P. H. N., chief.

Tuberculosis Control, Division of:

K. M. Soderstrom, M. D., B. S., M. P. H., chief.

Vital Statistics, Division of:

Francis D. Rhoads, A. B., M. A., C. P. H.,
chief and State registrar.

Publications:

Weekly Communicable Disease Report.
Water Supply and Sewage News—bimonthly.
Statistical Bulletin—at irregular intervals.
Annual Report.

WEST VIRGINIA STATE HEALTH DEPARTMENT

Charleston

Commissioner:

C. F. McClintic, M. D., B. S.

Barbers and Beauticians, Bureau of:

E. L. Peters, director.

Communicable Diseases, Division of:

Albert M. Price, M. D., C. P. H., director.

Dental Hygiene, Bureau of:

Russell K. Smith, M. S., D. D. S., director.

Industrial Hygiene, Bureau of:

J. William Crosson, B. A., M. D., director.

Public Health Education, Bureau of:

Dorothea Campbell, director.

Public Health Nursing, Bureau of:

Laurene C. Fisher, R. N., director.

Sanitary Engineering, Division of:

J. B. Harrington, B. E., director.

State Hygienic Laboratory:

Katherine E. Cox, B. A., director.

Tuberculosis, Bureau of:

W. E. McIlvain, M. S., B. S., director.

Vital Statistics, Division of:

Franklin H. Reeder, M. B., director.

Publications:

Community Sanitation News Letter—biweekly.

Monthly News Letter.

The Sanitarian—bimonthly.

Biennial Report.

WISCONSIN STATE BOARD OF HEALTH

Madison

State Health Officer:

C. A. Harper, B. S., M. D.

Carl N. Neupert, M. D., M. S. P. H., assistant.

Communicable Diseases, Bureau of:

Harry M. Guilford, B. S., M. D., chief.

Community Sanitation:

Roderick F. Bott, B. S., supervisor.

Dental Education:

F. A. Bull, D. D. S., M. P. H., supervisor.

Industrial Hygiene:

Paul A. Brehm, B. S., M. D., supervisor.

Local Health Services:

E. H. Jorris, B. A., M. D., M. S. P. H.

Maternal and Child Health:

Amy Louise Hunter, A. B., M. S., M. D.,
Dr. P. H., chief.

Nursing Education:

Leila I. Given, B. S., R. N., director.

Public Health Nursing, Division of:

Cornelia van Kooy, R. N., supervisor.

Sanitary Engineering and Stream Pollution:

L. F. Warrick, B. S., M. S., State sanitary engineer.

Venereal Disease Control Officer:

Milton Trautmann, B. S., M. D., M. P. H.

Vital Statistics:

Francis E. Kester, Ph. B., assistant registrar.

Publications:

Prevalence of Communicable Diseases—weekly.

Quarterly Bulletin.

Biennial Report.

WYOMING STATE DEPARTMENT OF HEALTH

Cheyenne

State Health Officer:

M. C. Keith, M. D.

Dental Health, Division of:

C. H. Carpenter, D. D. S., director.

Epidemiology, Division of:

N. H. Savage, M. D., C. P. H., director.

Maternal and Child Health, and Crippled Children,
Division of:Margaret H. Jones, M. D., M. A., C. P. H.,
director.

Public Health Laboratories, Division of:

Ralph B. Williams, B. S.

Sanitary Engineering, Division of:

L. O. Williams, Jr., B. S., C. P. H., director.

Vital Statistics, Division of:

Stanley G. Hanks, B. S., M. S., C. P. H.,
director.

Publications:

Communicable Disease Report—weekly.

Healthful Living Bulletin—monthly.

Public Health Nurses Bulletin—monthly.

DEATHS DURING WEEK ENDED OCTOBER 25, 1941

[From the Weekly Mortality Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended Oct. 25, 1941	Correspond- ing week, 1940
Data from 87 large cities of the United States:		
Total deaths.....	7,856	8,060
Average for 3 prior years.....	7,956	
Total deaths, first 43 weeks of year.....	358,385	359,788
Deaths per 1,000 population, first 43 weeks of year, annual rate.....	11.7	11.7
Deaths under 1 year of age.....	577	452
Average for 3 prior years.....	481	
Deaths under 1 year of age, first 43 weeks of year.....	22,611	21,459
Data from industrial insurance companies:		
Policies in force.....	64,549,170	64,801,951
Number of death claims.....	11,681	10,615
Death claims per 1,000 policies in force, annual rate.....	9.4	8.6
Death claims per 1,000 policies, first 43 weeks of year, annual rate.....	9.5	9.7

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

REPORTS FROM STATES FOR WEEK ENDED NOVEMBER 1, 1941

Summary

Of the 9 communicable diseases reported weekly by the State health officers and included in the following table, only influenza and poliomyelitis were above the 5-year (1936-40) median expectancy.

A total of 285 cases of poliomyelitis was reported, as compared with 294 cases for the preceding week, 195 for the 5-year median, and 624 cases for the week ended August 30, the peak week for the current year. The slow decline is due to the persistence of the disease in the Middle Atlantic, East North Central, and East South Central States, which areas recorded increases during the current week. The following named 5 States reported 15 or more cases (last week's figures in parentheses): New York 67 (57); Tennessee 23 (22); Alabama 22 (12); New Jersey 20 (15); Illinois 20 (12).

The number of reported cases of influenza increased from 1,330 to 1,553, of which Texas reported 759 and South Carolina 293. From June 1 to November 1, of a total of 19,384 cases of influenza reported in the United States, 7,796 cases, or 40 percent, have been reported in Texas.

Of 633 cases of diphtheria reported for the current week, 267, or 42 percent, occurred in the South Atlantic States, and of 3,291 cases of whooping cough, 2,158, or 66 percent, were reported in the East North Central, Middle Atlantic, and South Atlantic areas.

Four of the 8 cases of smallpox reported for the week occurred in the West North Central States. Of 58 cases of endemic typhus fever, 17 occurred in Georgia, 10 in Louisiana, and 8 in Texas.

The death rate for the current week for 88 large cities is 11.2 per 1,000 population as compared with 11.0 for both the preceding week and the 3-year (1938-40) average. The accumulative rate to date is 11.7, the same as for the corresponding period last year.

Telegraphic morbidity reports from State health officers for the week ended November 1, 1941, and comparison with corresponding week of 1940 and 5-year median

In these tables a zero indicates a definite report, while leaders imply that, although none were reported, cases may have occurred.

Division and State	Diphtheria			Influenza			Measles			Meningitis, meningococcus		
	Weekended		Med- ian 1936- 40	Week ended		Med- ian 1936- 40	Week ended		Med- ian 1936- 40	Week ended		Med- ian 1936- 40
	Nov. 1, 1941	Nov. 2, 1940		Nov. 1, 1941	Nov. 2, 1940		Nov. 1, 1941	Nov. 2, 1940		Nov. 1, 1941	Nov. 2, 1940	
NEW ENG.												
Maine	0	1	1		1		55	75	30	0	0	0
New Hampshire	1	0	0				0	0	2	0	0	0
Vermont	1	0	0				2	3	8	0	0	0
Massachusetts	2	4	3				145	173	80	1	2	0
Rhode Island	1	0	1				10	0	2	0	1	0
Connecticut	1	0	2	1		1	43	3	7	1	0	0
MID. ATL.												
New York ¹	22	11	18	21	210	210	101	200	128	1	2	5
New Jersey	10	7	11	6	4	12	17	134	25	1	0	0
Pennsylvania	9	15	34	1			112	531	40	2	0	2
E. NO. CEN.												
Ohio	21	18	48	11	20	7	52	25	25	2	1	1
Indiana	22	7	31	16	5	16	3	9	9	3	1	2
Illinois	16	27	35	8	3	10	31	147	25	0	2	2
Michigan ²	5	7	22		2	2	35	127	59	1	3	1
Wisconsin	4	1	2	10	27	24	110	205	33	1	1	0
W. NO. CEN.												
Minnesota	0	2	4				6	9	16	1	1	1
Iowa	8	9	5	1	2	1	21	51	19	0	1	0
Missouri	3	19	21	6	5	17	3	1	5	3	0	0
North Dakota	5	2	2				15	4	1	0	1	1
South Dakota	3	1	1				1	4	3	0	0	0
Nebraska	2	2	2			1	3	9	3	0	0	0
Kansas	2	5	8	6	1	2	29	5	5	0	1	1
SO. ATL.												
Delaware	4	0	0				1	3	3	0	0	0
Maryland ³	5	3	10	5	2	4	16	6	6	0	0	0
Dist. of Columbia	4	1	4	1			0	3	3	0	0	0
Virginia	37	22	63	70	67	57	36	20	20	1	1	1
West Virginia	10	4	21	2	6	10	61	4	8	0	1	1
North Carolina ⁴	140	49	142		4	4	84	6	101	2	0	2
South Carolina ⁴	32	20	25	213	331	294	34	3	4	1	1	1
Georgia ⁴	34	9	44	14	14	14	5	2	1	0	2	1
Florida ⁴	1	7	15	22	1	2	3	1	14	0	0	0
E. SO. CEN.												
Kentucky	13	18	33	7	2	9	49	59	20	0	2	2
Tennessee ^{1, 4}	27	9	32	14	6	27	10	5	5	2	0	0
Alabama ¹	23	12	39	28	14	46	51	5	5	1	5	2
Mississippi ^{2, 4}	20	7	15							0	0	0
W. SO. CEN.												
Arkansas	29	10	19	41	23	48	17	2	2	0	0	0
Louisiana ⁴	4	21	18	9	2	3	1	1	1	0	0	0
Oklahoma	11	19	22	50	31	33	5	0	1	0	0	0
Texas ⁴	77	30	58	759	271	203	38	10	18	4	0	0
MOUNTAIN												
Montana	0	5	1	2	7	7	19	3	13	0	1	1
Idaho	0	1	1		5	3	27	2	5	0	0	0
Wyoming ¹	3	0	0	4	1		4	1	2	0	0	0
Colorado	4	2	6	14	7	3	33	24	21	0	0	0
New Mexico	1	0	4	1		1	63	6	6	0	0	0
Arizona	0	7	3	85	68	36	75	22	3	0	0	0
Utah ³	0	0	1	4	4	2	5	3	12	0	0	1
Nevada	0	0					0	0		0	0	
PACIFIC												
Washington	1	6	2				3	5	20	2	1	0
Oregon	0	3	2	13	17	17	19	6	9	0	0	0
California	15	11	24	48	13	22	225	25	39	0	2	2
Total	633	414	997	1,553	976	976	1,678	1,942	1,750	30	33	33
44 weeks	12,662	12,632	21,661	577,329	175,897	157,887	841,437	230,512	274,513	1,735	1,452	2,531

See footnotes at end of table.

Telegraphic morbidity reports from State health officers for the week ended November 1, 1941, and comparison with corresponding week of 1940 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever		
	Week ended		Median 1936-40	Week ended		Median 1936-40	Week ended		Median 1936-40	Week ended		Median 1936-40
	Nov. 1, 1941	Nov. 2, 1940		Nov. 1, 1941	Nov. 2, 1940		Nov. 1, 1941	Nov. 2, 1940		Nov. 1, 1941	Nov. 2, 1940	
NEW ENG.												
Maine.....	0	0	0	12	4	6	0	0	0	1	1	1
New Hampshire.....	1	0	0	7	1	2	0	0	0	0	0	0
Vermont.....	1	0	0	3	6	4	0	0	0	0	2	0
Massachusetts.....	7	3	2	145	80	80	0	0	0	2	2	2
Rhode Island.....	0	0	0	4	4	6	0	0	0	0	0	0
Connecticut.....	0	0	0	17	21	30	0	0	0	1	3	2
MID. ATL.												
New York.....	67	9	9	178	150	178	0	0	0	9	8	15
New Jersey.....	20	1	1	73	73	60	0	0	0	4	3	3
Pennsylvania.....	14	8	8	111	161	230	0	0	0	11	7	15
E. NO. CEN.												
Ohio.....	9	23	10	116	178	227	0	0	0	5	21	15
Indiana.....	2	11	4	51	43	99	1	1	3	2	1	4
Illinois.....	20	31	18	148	266	243	0	4	2	2	3	14
Michigan ²	11	49	13	131	95	187	1	3	1	5	3	4
Wisconsin.....	5	36	3	111	121	125	0	0	3	1	1	1
W. NO. CEN.												
Minnesota.....	5	18	10	45	57	72	0	0	3	1	0	0
Iowa.....	1	21	15	39	66	69	1	0	8	4	2	1
Missouri.....	2	1	1	52	39	77	1	0	1	3	9	9
North Dakota.....	1	0	0	12	4	21	1	6	6	1	1	1
South Dakota.....	0	4	1	6	19	19	0	1	2	0	0	0
Nebraska.....	0	8	4	8	17	17	0	0	0	4	1	0
Kansas.....	1	12	2	48	60	99	1	0	1	0	2	2
SO. ATL.												
Delaware.....	5	0	0	6	7	6	0	0	0	0	0	1
Maryland ³	6	1	1	39	41	44	0	0	0	5	4	8
Dist. of Col.....	2	0	0	12	8	10	0	0	0	0	1	1
Virginia.....	7	12	1	50	53	49	0	0	0	14	5	8
West Virginia.....	2	25	2	75	50	79	0	0	0	3	5	9
North Carolina ¹	4	3	1	102	78	83	0	0	0	4	3	7
South Carolina ⁴	3	0	0	17	44	21	0	0	0	5	3	5
Georgia ⁴	5	0	1	18	38	30	0	0	0	7	7	11
Florida ⁴	7	1	1	6	4	11	0	0	0	1	2	1
E. SO. CEN.												
Kentucky.....	7	5	2	50	65	65	1	0	0	11	22	14
Tennessee ¹	23	0	0	59	23	46	0	2	2	12	1	9
Alabama ⁴	22	0	0	58	38	26	0	0	0	3	4	5
Mississippi ² & ⁴	0	0	1	12	14	14	0	0	0	0	4	4
W. SO. CEN.												
Arkansas.....	5	1	1	6	20	20	0	1	1	9	11	9
Louisiana ⁴	0	7	1	4	8	8	0	2	0	5	6	7
Oklahoma.....	1	3	3	21	21	23	0	2	2	1	7	9
Texas ⁴	4	2	3	37	37	41	0	0	2	6	9	23
MOUNTAIN												
Montana.....	1	3	0	25	13	26	0	0	1	0	4	3
Idaho.....	0	1	0	14	13	13	0	0	0	0	3	2
Wyoming ¹	0	0	0	5	4	8	0	0	0	2	0	0
Colorado.....	1	2	1	18	9	31	1	1	1	1	3	3
New Mexico.....	1	0	2	3	4	11	0	0	0	6	1	5
Arizona.....	0	0	0	0	1	6	0	0	0	0	1	2
Utah ²	4	3	1	5	4	19	0	0	0	1	0	0
Nevada.....	0	0	0	0	1	0	0	0	0	0	1	0
PACIFIC												
Washington.....	1	15	1	44	25	25	0	1	2	1	2	2
Oregon.....	2	2	2	12	10	21	0	0	1	3	1	3
California.....	5	9	9	89	62	147	0	1	1	3	2	7
Total.....	285	330	195	2,104	2,160	2,916	8	25	56	159	182	269
44 weeks.....	8,170	8,713	6,452	105,342	133,540	157,454	1,252	2,114	8,861	7,578	8,581	12,691

See footnotes at end of table.

Telegraphic morbidity reports from State health officers for the week ended November 1, 1941, and comparison with corresponding week of 1940—Continued

Division and State	Whooping cough		Division and State	Whooping cough	
	Week ended			Week ended	
	Nov. 1, 1941	Nov. 2, 1940		Nov. 1, 1941	Nov. 2, 1940
NEW ENG.			SO. ATL.—continued		
Maine.....	14	27	South Carolina ⁴	77	37
New Hampshire.....	7	8	Georgia ⁴	20	11
Vermont.....	19	3	Florida ⁴	18	10
Massachusetts.....	168	172	E. SO. CEN.		
Rhode Island.....	28	16	Kentucky.....	100	96
Connecticut.....	84	86	Tennessee ^{1,4}	45	20
MID. ATL.			Alabama ⁴	5	19
New York ¹	426	431	Mississippi ^{2,4}		
New Jersey.....	164	129	W. SO. CEN.		
Pennsylvania.....	199	754	Arkansas.....	17	57
E. NO. CEN.			Louisiana ⁴	6	12
Ohio.....	196	343	Oklahoma.....	1	12
Indiana.....	19	10	Texas ⁴	88	86
Illinois.....	161	173	MOUNTAIN		
Michigan ²	335	279	Montana.....	39	0
Wisconsin.....	308	174	Idaho.....	6	9
W. NO. CEN.			Wyoming ¹	8	2
Minnesota.....	66	123	Colorado.....	38	31
Iowa.....	20	42	New Mexico.....	6	10
Missouri.....	11	23	Arizona.....	10	2
North Dakota.....	8	28	Utah ²	20	21
South Dakota.....	8	6	Nevada.....	0	0
Nebraska.....	6	13	PACIFIC		
Kansas.....	40	51	Washington.....	64	53
SO. ATL.			Oregon.....	16	8
Delaware.....	3	32	California.....	185	300
Maryland ³	31	87	Total.....		
Dist. of Col.....	24	11		3,291	4,095
Virginia.....	61	87	44 weeks.....		
West Virginia.....	13	50		180,934	139,088
North Carolina ¹	103	141			

¹ Rocky Mountain spotted fever, 4 cases, as follows: New York, 1; North Carolina, 1; Tennessee, 1; Wyoming, 1 (delayed report).

² New York City only.

³ Period ended earlier than Saturday.

⁴ Typhus fever, 58 cases as follows: South Carolina, 6; Georgia, 17; Florida, 5; Tennessee, 2; Alabama, 7; Mississippi, 3; Louisiana, 10; Texas, 8.

WEEKLY REPORTS FROM CITIES

City reports for week ended Oct. 18, 1941

This table lists the reports from 131 cities of more than 10,000 population distributed throughout the United States, and represents a cross section of the current urban incidence of the diseases included in the table.

State and city	Diph- theria cases	Influenza		Meas- les cases	Pneu- monia deaths	Scar- let fever cases	Small- pox cases	Tuber- culosis deaths	Ty- phoid fever cases	Whoop- ing cough cases	Deaths, all causes
		Cases	Deaths								
Maine:											
Portland	0		0	1	0	3	0	0	0	3	19
New Hampshire:											
Concord	0		0	0	0	0	0	1	0	0	6
Nashua	0		0	0	0	0	0	0	0	0	6
Vermont:											
Burlington	0		0	0	0	0	0	0	0	0	9
Rutland	0		0	0	0	0	0	0	0	0	3
Massachusetts:											
Boston	0		1	4	3	20	0	6	0	31	203
Fall River	0		0	0	0	5	0	0	0	2	27
Springfield	0		0	16	0	12	0	0	0	8	29
Worcester	0		0	1	4	6	0	1	0	8	53
Rhode Island:											
Pawtucket	1		0	0	0	0	0	0	0	0	12
Providence	1		0	3	2	3	0	3	0	19	49
Connecticut:											
Bridgeport	0		0	1	1	0	0	0	0	0	25
Hartford	0		0	0	0	1	0	0	0	0	38
New Haven	1		0	9	0	2	0	0	0	3	40
New York:											
Buffalo	0		1	0	4	6	0	3	0	8	105
New York	11	4	0	15	37	35	0	72	7	168	1,276
Rochester	0		0	2	0	5	0	2	0	3	65
Syracuse	0		0	0	0	0	0	0	0	10	56
New Jersey:											
Camden	1		0	0	1	0	0	1	0	10	29
Newark	0		0	1	2	3	0	3	1	45	86
Trenton	1		0	0	3	0	0	2	0	0	44
Pennsylvania:											
Philadelphia	0		0	1	11	17	0	19	1	49	397
Pittsburgh	2	2	0	1	10	4	0	3	4	24	145
Reading	0		0	1	0	0	0	1	0	0	24
Scranton	0			1		1	0		0	0	
Ohio:											
Cincinnati	0		0	0	1	12	0	5	0	16	109
Cleveland	2	2	0	1	8	23	0	8	2	26	187
Columbus	0		0	0	2	8	0	2	0	9	86
Toledo	0		0	0	3	5	0	5	0	15	57
Indiana:											
Anderson	0		0	0	0	0	0	0	0	1	10
Fort Wayne	0		0	0	1	1	0	2	0	0	25
Indianapolis	2		0	0	10	14	0	4	1	6	89
Muncie	0		0	1	2	2	0	0	0	1	16
South Bend	0		0	0	0	0	0	0	0	0	12
Terre Haute	0		0	0	2	0	0	0	0	0	32
Illinois:											
Chicago	9		2	11	16	36	0	28	1	97	634
Elgin	0		0	0	0	0	0	1	0	6	15
Moline	0		0	0	0	1	0	0	1	6	4
Springfield	0		0	1	1	1	0	0	0	0	22
Michigan:											
Detroit	2		0	10	3	28	0	17	0	59	222
Flint	0		0	0	4	0	0	0	0	2	30
Grand Rapids	0		0	1	0	0	0	0	0	7	27
Wisconsin:											
Kenosha	0		0	0	0	2	0	0	0	2	3
Madison	0		0	3	0	3	0	0	0	5	7
Milwaukee	0		0	4	2	15	0	0	1	80	105
Racine	0		0	2	0	3	0	0	0	12	11
Superior	0		0	0	0	0	0	0	0	4	9
Minnesota:											
Duluth	0		0	0	0	5	0	1	0	8	21
Minneapolis	2		0	0	0	4	0	2	1	23	104
St. Paul	0		0	0	4	11	0	0	0	12	48
Iowa:											
Cedar Rapids	0			0		1	0		0	0	
Davenport	0			0		0	0		0	0	
Des Moines	0		0	1	0	2	0	0	0	0	22
Sioux City	0			0		0	0		0	0	
Waterloo	2			0		2	0		2	0	

City reports for week ended Oct. 18, 1941—Continued

State and city	Diph- theria cases	Influenza		Mea- sles cases	Pneu- monia deaths	Scar- let fever cases	Small- pox cases	Tuber- culosis deaths	Ty- phoid fever cases	Whoop- ing cough cases	Deaths, all causes
		Cases	Deaths								
Miscouri:											
Kansas City.....	0		1	1	3	5	0	5	0	7	93
St. Joseph.....	0		0	0	2	2	0	0	0	0	18
St. Louis.....	0		0	1	5	13	0	2	1	8	168
North Dakota:											
Fargo.....	0		0	0	1	0	0	0	0	1	8
Grand Forks.....	0			0		0	0	0	0	0	
Minot.....	0		0	1	0	0	0	0	0	0	5
South Dakota:											
Aberdeen.....	0			0		0	0		0	1	
Sioux Falls.....	0		0	0	0	0	0	0	0	0	9
Nebraska:											
Lincoln.....	0			0		0	0		0	0	
Omaha.....	1		0	0	3	4	0	1	0	1	54
Kansas:											
Lawrence.....	0	1	1	1	0	0	0	0	0	0	1
Topeka.....	0		0	0	1	10	0	0	0	3	8
Wichita.....	0	1	1	0	0	2	0	0	1	0	25
Delaware:											
Wilmington.....	1		0	0	1	3	0	0	0	0	15
Maryland:											
Baltimore.....	2	1	0	9	9	9	0	7	1	21	202
Cumberland.....	0		0	0	0	0	0	0	0	0	13
Frederick.....	0		0	0	0	0	0	0	0	0	3
Dist. of Col.:											
Washington.....	2		0	4	2	14	0	11	1	25	167
Virginia:											
Lynchburg.....	3		0	0	0	1	0	0	0	0	4
Norfolk.....	3			0	2	1	0	0	0	1	25
Richmond.....	1		1	1	0	1	0	1	0	0	52
Roanoke.....	0		0	0	0	1	0	0	0	0	8
West Virginia:											
Charleston.....	1		0	0	1	1	0	1	0	0	27
Huntington.....	1			0		0	0		0	0	
Wheeling.....	0		0	2	2	1	0	1	0	1	22
North Carolina:											
Gastonia.....	1			0		0	0		0	0	
Wilmington.....	1		0	1	1	2	0	0	0	10	11
Winston-Salem.....	3		0	5	1	1	0	1	0	0	13
South Carolina:											
Charleston.....	3	2	0	0	4	0	0	1	0	0	23
Florence.....	0		0	0	0	1	0	1	0	1	11
Greenville.....	3		0	0	0	1	0	0	0	0	23
Georgia:											
Atlanta.....	3	7	0	0	3	10	0	4	0	0	71
Brunswick.....	0		0	0	1	0	0	0	0	0	4
Savannah.....	0		0	2	0	0	0	0	0	0	29
Florida:											
Miami.....	1		0	0	3	1	0	3	0	5	35
St. Petersburg.....	0		0	0	1	1	0	0	0	2	14
Tampa.....	1		0	0	2	0	0	2	0	4	32
Kentucky:											
Ashland.....	1		0	0	0	0	0	0	0	2	8
Covington.....	0		0	0	2	1	0	2	0	0	14
Lexington.....	0		0	0	0	0	0	1	0	0	12
Louisville.....	0		0	2	3	22	0	2	0	16	71
Tennessee:											
Knoxville.....	1		0	0	2	1	0	3	0	0	28
Memphis.....	2		1	0	0	6	0	1	0	7	72
Nashville.....	6		0	0	1	2	0	3	0	4	45
Alabama:											
Birmingham.....	0	1	0	0	0	9	0	3	0	2	65
Mobile.....	1		0	0	1	0	0	0	0	0	30
Montgomery.....	0			0		1	0		0	0	
Arkansas:											
Fort Smith.....	1			0		0	0		0	0	
Little Rock.....	0	1	0	0	1	0	0	3	0	0	27
Louisiana:											
Lake Charles.....	1		0	0	0	0	0	0	0	0	3
New Orleans.....	5	2	1	1	9	1	0	4	2	3	103
Shreveport.....	0		0	0	2	0	0	1	0	0	32
Oklahoma:											
Oklahoma City.....	1	1	0	0	4	2	0	3	0	0	36
Tulsa.....	1		0	6	0	1	0	0	1	1	7

City reports for week ended Oct. 18, 1941—Continued

State and city	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Small-pox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases	Deaths, all causes
		Cases	Deaths								
Texas:											
Dallas	8		0	2	1	1	0	0	0	0	50
Fort Worth	1		0	0	3	1	0	0	0	3	29
Galveston	0		0	0	1	1	0	1	0	0	14
Houston	0		0	0	5	1	0	5	0	6	78
San Antonio	0	7	2	0	3	4	0	7	1	1	60
Montana:											
Billings	1		0	0	1	0	0	0	0	0	8
Great Falls	0		0	0	0	4	0	0	0	3	6
Helena	0		0	0	0	1	0	0	0	0	2
Missoula	0		0	0	0	0	0	0	0	0	2
Colorado:											
Colorado Springs	0		0	0	1	0	0	0	0	0	6
Denver	5	12	0	11	5	4	0	1	0	48	67
Pueblo	0		0	1	1	2	0	1	0	6	11
New Mexico:											
Albuquerque	0		0	0	4	0	0	1	0	6	12
Utah:											
Salt Lake City	0		0	1	0	2	0	0	0	4	38
Washington:											
Seattle	0		0	0	4	0	0	2	0	18	85
Spokane	0		0	0	1	3	0	1	0	9	30
Tacoma	0		0	1	0	4	0	0	0	3	27
Oregon:											
Portland	0	3	1	1	2	0	0	4	0	0	55
Salem	0	1		0		1	0		1	0	
California:											
Los Angeles	10	7	0	14	4	15	0	11	0	37	326
Sacramento	2		0	0	0	1	0	0	0	0	29
San Francisco	0		0	1	6	8	0	6	0	6	184

State and city	Meningitis, meningococcus		Polio-myelitis cases	State and city	Meningitis, meningococcus		Polio-myelitis cases
	Cases	Deaths			Cases	Deaths	
Massachusetts:				Missouri:			
Boston	1	0	8	St. Joseph	1	0	0
Rhode Island:				St. Louis	0	0	1
Pawtucket	0	0	1	North Dakota:			
Providence	0	0	1	Fargo	0	0	1
Connecticut:				Kansas:			
Hartford	0	0	1	Wichita	0	0	1
New York:				Maryland:			
Buffalo	1	0	0	Baltimore	1	0	2
New York	0	0	16	District of Columbia:			
Syracuse	0	0	5	Washington	0	0	4
Pennsylvania:				Virginia:			
Philadelphia	0	0	9	Richmond	1	0	0
Pittsburgh	0	0	3	South Carolina:			
Reading	0	0	1	Charleston	0	0	1
Ohio:				Tennessee:			
Cleveland	0	0	4	Knoxville	0	0	1
Indiana:				Nashville	0	0	3
Fort Wayne	0	0	2	Alabama:			
Illinois:				Birmingham	0	0	1
Chicago	1	0	0	Louisiana:			
Michigan:				Shreveport	0	1	0
Detroit	0	0	3	Texas:			
Flint	0	0	1	San Antonio	0	0	1
Wisconsin:				Utah:			
Madison	0	0	1	Salt Lake City	0	1	0
Minnesota:				Washington:			
Duluth	0	0	1	Seattle	0	0	1
Minneapolis	0	1	4				
St. Paul	0	0	6				

Encephalitis, epidemic or lethargic.—Cases: Springfield, Mass., 1; Syracuse, 1; Minneapolis, 3; Salem, Oreg., 1.

Pellagra.—Cases: Atlanta, 1; Savannah, 1; Birmingham, 1.

Rabies in man.—Deaths: Mobile, 1.

Typhus fever.—Cases: New York, 2; Charleston, S. C., 1; Atlanta, 2; Savannah, 2; Tampa, 2; Mobile, 1; Montgomery, 1; Lake Charles, 1; New Orleans, 1; Houston, 1; Los Angeles, 1.

Rates (annual basis) per 100,000 population for a group of 87 selected cities (population, 1940, 33,845,176)

Period	Diphtheria cases	Influenza		Measles cases	Pneumonia deaths	Scarlet fever cases	Smallpox cases	Tuberculosis deaths	Typhoid fever cases	Whooping cough cases
		Cases	Deaths							
Week ended Oct. 18, 1941....	14.79	7.55	1.69	22.19	33.74	66.86	0.00	42.06	3.70	152.83
Average for week, 1936-40....	21.18	10.74	3.58	52.47	58.86	90.93	0.62	49.36	6.70	146.83

PLAGUE INFECTION IN FLEAS FROM GROUND SQUIRRELS IN SISKIYOU COUNTY, CALIF.

Under date of October 22, 1941, Dr. Bertram P. Brown, Director of Public Health of California, reported plague infection proved, by animal inoculation and cultures, in a pool of 145 fleas from 5 ground squirrels, *C. douglasii*, submitted to the laboratory on September 13 from the right-of-way of the Southern Pacific Railway inside the city limits of Mount Shasta City, Siskiyou County, Calif.

TERRITORIES AND POSSESSIONS

HAWAII TERRITORY

Plague (rodent).—A rat found on October 2, 1941, about a mile from Honokaa village in the Kapulena area, Hamakua District, Island of Hawaii, T. H., has been proved positive for plague.

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended September 27, 1941.—

During the week ended September 27, 1941, cases of certain communicable diseases were reported by the Department of Pensions and National Health of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Cerebrospinal meningitis		5		4	6			1	1	17
Chickenpox		6		47	97	38	2		31	221
Diphtheria		21		28		4	3			56
Dysentery				5	2					7
Influenza					9	2			11	22
Lethargic encephalitis						9	11	13	2	35
Measles		2		121	39	2	3	3	4	174
Mumps				115	52	10	10	2	31	220
Pneumonia		1			12					13
Poliomyelitis		2	20	3	5	15	3	4	5	57
Scarlet fever		11	4	65	87	19	12	6	6	210
Trachoma							1			1
Tuberculosis	11	2	4	90	43	8				158
Typhoid and paratyphoid fever			1	34	8	3	12		2	60
Whooping cough		3		170	68		9	3	13	266

¹ Encephalomyelitis.

COSTA RICA

*Communicable diseases—September 1941.—*During the month of September 1941, certain communicable diseases were reported in Costa Rica as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Diphtheria	29	4	Scarlet fever	5	
Influenza	200	2	Typhoid and paratyphoid fever	7	3
Poliomyelitis	1				

(2183)

SCOTLAND

Vital statistics—Quarter ended March 31, 1941.—Following are provisional vital statistics for Scotland for the quarter ended March 31, 1941:

	Number	Rate per 1,000 popu- lation		Number	Rate per 1,000 popu- lation
Marriages	10,751	8.5	Deaths from—Con.		
Births	22,253	17.6	Influenza	478	0.40
Deaths	23,332	19.2	Lethargic enceph- alitis	6	
Deaths under 1 year of age.	2,435	1.109	Measles	67	.06
Deaths from:			Nephritis, acute and chronic	432	
Appendicitis	92		Pneumonia (all forms)	1,580	1.31
Cancer	2,064	1.72	Polio-myelitis	10	
Cerebral hemorrhage and apoplexy	1,360		Puerperal sepsis	40	
Cerebrospinal fever	128	.10	Scarlet fever	6	.005
Cirrhosis of the liver	34		Senility	755	
Diabetes mellitus	208		Suicide	93	
Diarrhea and enteritis (under 2 years of age)	178		Syphilis	64	
Diphtheria	187	.16	Tetanus	1	
Dysentery	13		Tuberculosis (all forms)	1,157	.95
Erysipelas	9		Typhoid and paraty- phoid fever	5	.004
Heart disease	5,270		Whooping cough	324	.27
Homicide	8				

¹ Per 1,000 live births.

NOTE.—All deaths given in the above table are for civilians only.

RECENT GERMAN AND CZECH VITAL STATISTICS

The following vital statistics for Germany (old Reich) and the area termed the "former Czech Territories" have recently been issued officially by the German Government:

Rates per 1,000 population

	Marriages	Live births	Stillbirths	Total deaths	Deaths under 1 year per 1,000 live births
January-May 1941:					
German	8.5	18.2	0.4	14.1	73
Czech	7.6	17.9	0.4	15.1	118
January-May 1940:					
German	11.0	22.5	0.5	15.4	72
Czech	9.6	17.5	0.4	15.3	114

BIRTH RATE AND SUBSIDIES IN GERMANY

According to official figures, the number of marriages in the old Reich increased from 517,000 in 1932 to 772,000 in 1939, and birth rates from 14.7 per 1,000 population in 1933 to 20.3 in 1939.

Various types of loans and subsidies are granted by the Government to encourage large families. Since August 1933, 1,800,000 marriage loans have been made; since October 1935, 1,100,000 subsidies have been granted for the birth of a child in families already having 3 or

more children, and since 1938, 400,000 educational grants have been made and 180,000 equipment subsidies granted. In addition, 2,500,000 families receive monthly subsidies for 5,000,000 children. To September 1941, three billion marks had been paid in these subsidies and beginning with the present fiscal year they are expected to total one billion annually.

REPORTS OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER RECEIVED DURING THE CURRENT WEEK

NOTE.—Only those places are included which had not previously reported any of the above-named diseases, except yellow fever, during the current year. All reports of yellow fever are published currently.

A cumulative table showing the reported prevalence of these diseases for the year to date is published in the PUBLIC HEALTH REPORTS for the last Friday of each month.

Plague

Belgian Congo.—From the beginning of July to August 2, 1941, 21 fatal cases of pneumonic plague occurred in the villages of Taratibu and Mandombele, near Blukwa, in addition to a fatal case of bubonic plague which occurred in Blukwa. During the week ended August 9, 1941, 1 death suspected of being due to bubonic plague was reported in the village of Busianga, near Lubero.

Yellow Fever

Brazil.—Yellow fever has been reported in Brazil as follows: Amazonas State—Manacapuru, Aug. 13, 1 death; Para State—Iritua, Aug. 19, 1 death; S. Miguel do Guama, Sept. 4, 1 death; S. Sebastiao Boa Vista, Aug. 21, 1 death.

Colombia.—Yellow fever has been reported in Colombia as follows: Intendencia of Meta—San Martin, Sept. 15, 1 death; Villavicencio, Sept. 25, 1 death; Santander Department—Bolívar, Sept. 11, 1 death, Sept. 14, 1 death; San Vincente de Chucuri, Sept. 28, 1 death.

Sudan (French)—Bamako Circle—Kati.—On October 26, 1941, 1 case of suspected yellow fever was reported in Kati, Bamako Circle, French Sudan.

COURT DECISIONS ON PUBLIC HEALTH

Habitual criminal sterilization act upheld.—(Oklahoma Supreme Court; *Skinner v. State ex rel. Williamson*, Atty. Gen., 115 P.2d 123; decided February 18, 1941, rehearing denied July 8, 1941.) The "Oklahoma Habitual Criminal Sterilization Act", enacted pursuant to the police power of the State, defined an "habitual criminal" as a person who had been convicted two or more times to final judgment of crimes amounting to felonies involving moral turpitude either in a court of competent jurisdiction of Oklahoma or of any other State and who was thereafter convicted to final judgment in a court of

competent jurisdiction of Oklahoma of a crime amounting to a felony involving moral turpitude and sentenced to imprisonment in a State penitentiary, reformatory, or other like penal institution. There were excepted from the act persons convicted of offenses arising out of the violation of the prohibitory laws and revenue acts, embezzlement, or political offenses. The statute provided for a proceeding against a person having the status of an habitual criminal and, among other things, stated that, if the court or jury, as the case might be, found the defendant to be such an habitual criminal and that said defendant could be rendered sexually sterile without detriment to his or her general health, the court should render judgment that the defendant be rendered sexually sterile.

In the instant case, under the findings of a jury, the lower court ordered sterilization and an appeal was taken to the Supreme Court of Oklahoma. The appellant assailed the constitutionality of the act and the court first considered the claims that the act (a) inflicted cruel and unusual punishment, (b) constituted a bill of attainder, and (c) was an ex post facto law. As the constitutional inhibitions here involved had reference only to punishment for crime, these claims were, according to the court, upon the premise that the act was a penal law and that sterilization was inflicted as a punishment, and the decisive question in connection with the determination of the objections was whether the act was a penal statute or a eugenic measure. The view taken by the supreme court was adverse to the appellant, the court saying that it thought that "it was the intention of the legislature that this act should be a eugenic measure to improve the safety and general welfare of the race by preventing from being born persons who will probably become criminals."

The next contention was that the act violated the due process clause of both the State and Federal constitutions. The objection made was that the act did not require a finding by the court or jury that by the laws of heredity the appellant was the probable potential parent of children with criminal tendencies, and it was argued that he was thereby deprived of a full hearing. The court said that the question was whether the statute was "a reasonable exercise of the police power in providing that all habitual criminals as therein defined shall be sterilized, for if it is proper to enact such a provision the procedural aspects are satisfied." The determination, said the court, of the reasonableness of the act's provisions as an exercise of the police power was based upon the question of fact of whether habitual criminals as defined possessed an inheritable tendency to crime which would be passed on to their children if they were allowed to procreate. If that were true then the act bore a real relation to the public welfare, but if it were not true the act would encroach upon the constitu-

tional rights of individuals without justification. The court stated that it had to assume that the legislature had before it statistics, scientific works, and information from which it found as a fact that habitual criminals were more likely than not to beget children of like criminal tendencies who would probably become a burden upon society. "Every presumption must be indulged in favor of the existence of facts which the legislature assumed and acted upon, and we are not at liberty to strike down the act unless we can say beyond a reasonable doubt that the legislature was clearly in error, and was wholly unwarranted and acted arbitrarily, in assuming or determining such facts." The court found nothing in the record that justified a finding that the legislature was clearly and beyond a reasonable doubt in error in assuming facts justifying the act as a proper exercise of the police power and said that its knowledge on the subject was not superior to that of members of the legislature. The contention of the appellant relative to due process of law was disposed of adversely to him.

The final claim that the act denied the appellant equal protection of the law in violation of the State and Federal constitutions was also decided against him. The court pointed out that the test of equal protection of the law was dependent upon the reasonableness of the classification and stated that it appeared that the classification in the instant case was reasonable as the act applied to all habitual criminals as therein defined whether incarcerated in an institution or not.

The judgment of the trial court was affirmed.

Payment for services performed by superintendent of county board of health.—(South Dakota Supreme Court; *Donahoe v. Minnehaha County*, 299 N.W. 238; decided July 3, 1941.) An action was brought by the plaintiff to recover for services performed by him as superintendent of a county board of health. The county had disallowed claims of the plaintiff based upon the making of routine examinations of school houses throughout the county. The judgment of the trial court was in favor of the defendant county and the plaintiff appealed to the supreme court.

The latter court referred to a statute which provided that a county board of health "shall have original power to inquire into sanitary conditions of school houses within the county, and upon complaint and investigation shall have power to abate any insanitary conditions that may be found to exist." "In order," said the court, "that 'original power' may be exercised there must be some action by the board itself. * * * Clearly the superintendent must receive some authority from the board of which he is a member before the investigations and services are rendered." It was pointed out that the rec-

ord disclosed that none of the items for which the plaintiff sought recovery was authorized or directed to be done at any meeting of the county board of health and that there had been no authorization or direction by the board or anyone to incur the services, mileage, and expenses. Also, the record was silent as to the report of any immediate emergency. On account of the foregoing, the court did not believe that the plaintiff's claims should be allowed.

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